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INTERACTION PATTERNS IN CHANGING NEIGHBORHOODS: NEW YORK AND PITTSBURGH

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A neighborhood is said to be changing when residents of one nationality group or socio-economic class with their own terms of social organization become displaced by peoples of another nationality group or socio-economic class with different forms of social organization.[1] Such neighborhoods are characterized by a rising rate of overcrowding,[2] by decreasing length of resident tenure,[3] by increasing disrepair in and around building structures,[4] and by decreasing rent *per* person per dwelling unit.[5] It has been proposed[6] that the changing neighborhood fosters increased social distance, culture conflict, and inter-ethnic hostility.

These concepts, however, require for their exploration methods that are capable of revealing interaction patterns among the members of the community, the base upon which overt behavior takes place. Relatively little progress has been made in resolving social distances, culture conflicts, and inter-ethnic hostilities because there had not been until Moreno discovered means of fundamentally analyzing the nature of society's inter-personal structure, recognition of the importance of such structures. With his invention of the sociometric test, psychodramatic and sociodramatic procedure, and the researches that have followed from their use, it has become increas-

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*Special Projects Department, Irene Kaufman Settlement, Pittsburgh, Pa., with the assistance of Sally Korngold, Margaret Yocum, John W. Bradfute, Keeve Brodman; Irving Canter, Irene Kaufmann Center; George Gregory, Forest House; Victor Hassler, Robert Heller; Irving Lanzer, Sociology Department, C.C.N.Y.; Aubrey Malloch, Bureau of Research, Federation of Social Agencies, Pittsburgh; Frank Rignano, Emil L. Schmidt; and Paul Schwartz, Bronx YM&WHA.

[1]Manuel C. Elmer, in James M. Gries and James Ford (eds.), *Slums, Large-Scale Housing and Decentralization*, Washington, D. C., 1932, p. 31.

[2]More than one person *per* room *per* dwelling unit.

[3]Clifford Shaw, *et al.*, *Delinquency Areas*, Chicago, 1929, pp. 11-22.

[4]Mabel Walker, *Urban Blights and Slums*, Harvard, Cambridge, 1938.

[5]Rents do not tend to decrease, and may even rise in neighborhoods newly occupied by a lower income group. New families "double up" with others to meet these rents.

[6]Harry M. Shulman, *Slums of New York*, Boni, New York, 1938.

ingly clear that any phenomena affecting human beings will show repercussions in the structuring of inter-personal relationships. Moreno himself has made apparent the influence of the social atom and the network upon the community, and the importance of what he terms the *tele factor* upon the formation of both, as well as numerous other aspects of social structure. Every section of the community, it is recognized, can be illumined by a sociometric approach to its problems.

It is the purpose of this paper to determine whether there are significant differences in the friendship patterns of members of the residual portion of the moving-out group in communities affected by large-scale population shifts, as compared to those living in neighborhoods not showing these changes.

Specifically, the problems at hand are these: (1) Are there differences in the range and intensity[7] of leisure-time associations between residents of unstable neighborhoods and residents of relatively stable ones? (2) Does the changing neighborhood make for stronger group ties? (3) Do residents of changing neighborhoods attempt to find "like" individuals as friends by transferring their social activities to other neighborhoods or, does the proximity of "unlike" individuals result in a closer voluntary association with them? (4) In instances where residents of unstable neighborhoods go out of their own neighborhoods to find their friends, do they show an increased tendency to choose "unlike" individuals; or, does the day-to-day contact with ethnically diverse peoples predispose to greater intercultural acceptance?

Method

This study was conducted in 1945-46 as part of a larger survey on voluntary associations among adolescents.[8] Two U. S. Census Tracts in metropolitan New York, and two in metropolitan Pittsburgh were chosen on the basis of 1940 census figures and current data from social agencies and neighborhood schools indicating a population shift in these areas.[9] One tract in Pittsburgh and one in New York were taken as showing a greater stability in this regard. The subjects from the four unstable tracts were

[7] J. L. Moreno, *Who Shall Survive?*, Beacon House, New York, 1934, and Helen H. Jennings, *Leadership and Isolation*, Longmans, Green, New York, 1943.

[8] Paul Deutschenberger, The Structure of Dominance, *Am. J. Ortho.*, in press.

[9] Demographical statistics from various bulletins of The U. S. Census Department on the 15th (1930) and 16th (1940) Decennial Censuses, prepared under the direction of Leon E. Truesdell; and, from *The Population of The City of New York (1890-1930)*, Walter Laildlaw, ed., New York, 1932.

designated "Group A," and their behavior was compared to that of the subjects from the two stable tracts, "Group B".

Areas Studied: *Group A*:

Census Tract 3A Pittsburgh is largely Negro, where formerly it was Russian-Jewish and Italian. The Russian-Jewish community began to break up during the 1930's, and the Italian after 1944. Rents[10] and overcrowding have continued to rise.

Census Tract 3D Pittsburgh is largely Negro, where formerly it had been settled by Russian and middle-European families. Since 1939 there has been a great reduction in the white population.

Census Tract 65 Bronx is in the center of an Italian district that has been showing large population losses since 1920.

Census Tract 125 Bronx was 99% white in 1940, with Russian and Polish-Jewish families predominating. This population had not significantly altered in composition or class from 1925 to 1940. Since 1940, Negroes and individuals of Central and South American derivation have displaced the former population.

Group B: Census Tract 14G Pittsburgh is preponderantly Russian and middle-European Jewish, with no significant alteration in the population since 1930.

Census Tract 391 Bronx has not significantly changed in size or composition of population since 1920, and is an Italian district.

Sample Studied:

Subjects were chosen from the nine to 16 year range because the association patterns of this age group are not restricted as much as those of younger individuals, and are not as fixed as those of older persons. These subjects were recruited through settlement houses, schools, and by a house-to-house canvass. An attempt was made to see about the same number of individuals in each tract, and in an even geographical distribution over each area. All subjects were white males regarding English as their native tongue. The estimated range of family income was less than 2,000 dollars a year.

Group A consisted of 301 subjects. Those from 3A Pittsburgh and 65 Bronx were Roman Catholic of Italian descent, while those from 3D Pittsburgh and 125 Bronx were Jewish of Russian or middle-European descent.

Group B consisted of 179 subjects. Those from 14G Pittsburgh were

[10]Despite OPA controls since 1942, rents have risen in the slum areas of Pittsburgh, and presumably also in those of New York. See, Wilson S. Borland, Rents in Blighted Areas of Pittsburgh, *The Federator*, 21: 18-21, 1946.

Jewish of Russian or middle-European descent, while those from 391 Bronx were Roman Catholic of Italian descent.

Method of Study:

The following questionnaire was orally submitted to all subjects:

> This is a test of how you spend your free time—that is, when you are not working or going to school. Make a list of the names of your best friends. You can put down as many or as few names as you wish.
>
> Write after each name about how much of your free time you spend with that person. Don't give numbers. Just say whether it is *much, medium,* or *little.*
>
> Now show which of these friends go with one another. If all the people on your list go with one another, put A's before all the names. If some go with some, and others with others, put A's for one set, B's for another, C's for another, and so on. If you find that a person goes into more than one set, give him as many letters as necessary. Finally, if you find that somebody does not go with anybody else on your list, put an X before the name. Now check your list to see that there is at least one letter before each name.
>
> Now tell where each of these friends live. If you don't know the address, say which streets it is near. Tell whether your friend is white or Negro, and, if you can, his religion.

The subject was prepared for a re-interview, and was given the same questionnaire at the end of six months. The responses given on the first occasion have been designated "Test I", and those on the second, "Test II".

The following scores were derived for each test:

(1) The *friendship range*[11]: computed by allowing a weight of five for each *much*, three for each *medium*, and one for each *little*, and finding the sum of the weights. Multiply-chosen individuals (those to whom the subject assigns more than one letter) were scored as many times as there were letters.

(2) A *group participation percent* was determined by

$$\frac{\Sigma w'}{\Sigma w} 100$$

where, $\Sigma w'$ is the sum of the weights in each set of choices marked with any letter but X; Σw, the sum of the weights in all sets including those marked with X.

[11] J. L. Moreno, H. H. Jennings, and Joseph Sargent, Time as a Quantitative Index of Inter-Personal Relations, SOCIOMETRY, 3:62-80, 1940.

(3) A *diversity percent*:

$$\frac{2\Sigma y + \Sigma z}{\Sigma w} 100$$

where, Σy is the sum of the weights of those choices differing from the subject in race; Σz, the sum of the weights of those choices differing from the subject in religion. (Race is given greater weight since it represents a greater obstacle in the choice process than does religion.)

(4) A *location percent*:

$$\frac{\Sigma v}{\Sigma w} 100$$

where, Σv is the sum of the weights of all choices living more than a quarter-mile from the subject's home.

(5) A *diversity-location percent*:

$$\frac{2\Sigma y' + \Sigma z'}{\Sigma d} 100$$

where, $\Sigma y'$ is the sum of the weights of those choices differing from the subject in race, and living more than a quarter-mile from the subject's home; $\Sigma z'$, the sum of the weights of those choices differing from the subject in religion, and living more than a quarter-mile from the subject's home; Σd, the sum of the weights of all choices living more than a quarter-mile from the subject's home.

Differences in the means for all these categories were computed for Test I and Test II, and between Group A and Group B. These differences were interpreted according to the probability of their occurrence in terms of their standard errors. Thus, a mean difference of 3.3 standard errors will occur by chance only once in a thousand times, and is hence statistically significant. A difference equal to 2.7 standard errors will occur by chance only once in a hundred times, while differences smaller than 2 standard errors suggest the influence of chance.

The mean scores of Group A and Group B on Test I were compared to determine whether or not true differences exist between the two groups. Significant differences in response between Test I and Test II from Group A, and not equally apparent in Group B, are taken as related to exposure to changes in the neighborhood.

Results

(1) *Range and Intensity of Leisure-Time Associations*: Subjects living in changing neighborhoods (Group A) scored a mean friendship range of 50.81 at the beginning of the study, while those from relatively stable neighborhoods (Group B) scored 59.29. Over the six month period, Group A lost 5.48 points, while Group B gained .39 points. The difference between the means of Group A-Test I and Group B-Test I is greater than zero and in favor of Group B. Where the difference in means between Group B-Test I and Group B-Test II is statistically not significant, that between Group A-Test I and Group A-Test II greatly exceeds the .001 level.

TABLE 1.

Friendship Range of 301 Subjects Living in Changing Neighborhoods (Group A), and of 179 Subjects Living in Stable Neighborhoods (Group B). Test I Is Six Months Prior to Test II.

Range	Group A		Group B	
	Test I	Test II	Test I	Test II
15-19		1		
20-24	1	1		
25-29	6	9	1	
30-34	13	20	1	2
35-39	18	35	2	2
40-44	31	59	5	5
45-49	51	73	11	9
50-54	68	78	26	24
55-59	69	21	39	40
60-64	28	2	51	54
65-69	9	1	27	24
70-74	5	1	9	10
75-79	1		4	6
80-84	1		2	3
85-89			1	
Number	301		179	
Mean	50.81	45.33	59.29	59.68
Median	52.24	46.75	60.44	60.70
S. D.	9.6	8.0	8.9	8.8
S. E.	.552	.461	.665	.658

$$M_{AI} - M_{AII} = 5.48 > 2.38 \tilde{=} P = .001$$

$$M_{BI} - M_{BII} = .39 < 1.87 \tilde{=} P = .05$$

$$M_{AI} - M_{BI} = 8.48 > 2.85 \tilde{=} P = .001$$

(2) *Group Ties*: Subjects between the ages of nine and 12 years from neighborhoods showing a population shift (Group A′) showed a mean increase of 6.06% in group participation between Tests I and II, with the probability of this difference occurring by chance being less than one in a thousand. Subjects in this same age range from neighborhoods in which no appreciable shift is occurring (Group B′) showed an increase of 7.10% in this period. The gains of both groups prove comparable statistically, with mean differences between the two groups on both tests falling short of the .05 level.

TABLE 2a.

GROUP PARTICIPATION PERCENTS OF 165 SUBJECTS BETWEEN THE AGES OF 9 AND 12 YEARS FROM CHANGING NEIGHBORHOODS (GROUP A′), AND 93 SUBJECTS BETWEEN THE AGES OF 9 AND 12 YEARS FROM STABLE NEIGHBORHOODS (GROUP B′). TEST I IS SIX MONTHS PRIOR TO TEST II.

	Group A′		Group B′	
Percent	Test I	Test II	Test I	Test II
91-100	60	75	36	50
81-90	43	63	20	23
71-80	23	13	12	11
61-70	16	8	11	6
51-60	13	3	7	2
41-50	8	2	5	
31-40	2	1	2	
Number	165		93	
Mean	80.39%	86.45%	79.73%	86.83%
Median	85.77%	89.81%	85.75%	91.70%
S.D.	15.7%	11.0%	16.7%	11.2%
S.E.	1.222%	.856%	1.732%	.162%

$$M_{A'I} - M_{A'II} = 6.06 > 4.92 \tilde{=} P = .001$$

$$M_{B'I} - M_{B'II} = 7.10 > 6.88 \tilde{=} P = .001$$

$$M_{A'I} - M_{B'I} = .66 < 4.24 \tilde{=} P = .05$$

$$M_{A'II} - M_{B'II} = .38 < 2.88 \tilde{=} P = .05$$

(3) Subjects between the ages of 13 and 16 years from changing neighborhoods (Group A″) gained 6.55% in mean group participation between Tests I and II, and exceeded the mean of subjects in this same age range from relatively stable neighborhoods (Group B″) by 8.43% on Test I. Group B″ showed a loss of 5.70% during the six month period, with this difference significant only on the .05 level.

TABLE 2b.

GROUP PARTICIPATION PERCENTS OF 136 SUBJECTS BETWEEN THE AGES OF 13 AND 16 YEARS FROM CHANGING NEIGHBORHOODS (GROUP A″), AND 86 SUBJECTS BETWEEN THE AGES OF 13 AND 16 YEARS FROM STABLE NEIGHBORHOODS (GROUP B″). TEST I IS SIX MONTHS PRIOR TO TEST II.

Percent	Group A″		Group B″	
	Test I	Test II	Test I	Test II
91-100	59	87	15	5
81-90	26	26	21	9
71-80	22	11	18	26
61-70	14	7	13	22
51-60	8	3	9	14
41-50	5	1	6	7
31-40	2	1	3	3
21-30			1	
Number	136		86	
Mean	81.69%	88.24%	73.26%	67.56%
Median	87.54%	93.18%	77.11%	69.64%
S.D.	15.4%	11.5%	17.2%	14.1%
S.E.	1.321%	.986%	1.855%	1.521%

$$M_{A''I} - M_{A''II} = 6.55 > 5.45 \tilde{=} P = .001$$

$$M_{B''I} - M_{\ ''II} = 5.70 > 4.80 \tilde{=} P = .05$$

$$M_{A''I} - M_{B''I} = 8.43 > 7.52 \tilde{=} P = .001$$

$$M_{A'I} - M_{A''I} = 1.30 < 3.60 \tilde{=} P = .05$$

$$M_{A'I} - M_{B''I} = 7.13 < 7.33 \tilde{=} P = .001$$

$$> 5.99 \tilde{=} P = .01$$

$$M_{B'I} - M_{A''I} = 1.96 < 4.36 \tilde{=} P = .05$$

$$M_{B'I} - M_{B''I} = 6.47 > 5.08 \tilde{=} P = .05$$

The mean difference in group participation between Group A′-Test I and Group A″-Test I, as well as Group B′-Test I and Group A″-Test I, show no significant divergencies. A significant difference in favor of Group A″ is to be found between Group A″-Test I and Group B″-Test I. The difference between Group B′-Test I and Group B″-Test I just exceeds the .05 level, but a very significant difference exists between these two groups on Test II.

(3) *Choice of Unlikes*: The mean diversity of Group A showed a decline amounting to 5.08% between Test I and Test II, while Group B moved

TABLE 3.

DIVERSITY PERCENTS OF 301 SUBJECTS FROM CHANGING NEIGHBORHOODS (GROUP A), AND OF 179 SUBJECTS FROM STABLE NEIGHBORHOODS (GROUP B). TEST I IS SIX MONTHS PRIOR TO TEST II.

Percent	Group A		Group B	
	Test I	Test II	Test I	Test II
0- 9.99	133	174	44	26
10-19.99	77	76	49	34
20-29.99	36	29	34	57
30-39.99	24	14	23	30
40-49.99	18	6	12	14
50-59.99	9	2	9	9
60-69.99	3		7	8
70-79.99	1		1	1
Number	301		179	
Mean	17.06%	11.98%	23.32%	27.01%
Median	12.27%	8.65%	19.29%	25.18%
S.D.	14.9%	10.3%	16.9%	15.9%
S.E.	.859%	.594%	1.263%	1.181%

$$M_{AI} - M_{AII} = 5.08 > 3.43 \tilde{=} P = .011$$

$$M_{BI} - M_{BII} = 3.69 > 3.46 \tilde{=} P = .05$$

$$M_{AI} - M_{BI} = 6.26 > 5.05 \tilde{=} P = .001$$

TABLE 4.

LOCATION PERCENTS OF 301 SUBJECTS FROM CHANGING NEIGHBORHOODS (GROUP A), AND OF 179 SUBJECTS FROM STABLE NEIGHBORHOODS (GROUP B). TEST I IS SIX MONTHS PRIOR TO TEST II.

Percent	Group A		Group B	
	Test 1	Test II	Test I	Test II
0- 9.99	146	171	48	26
10-19.99	77	95	49	34
20-29.99	36	22	33	47
30-39.99	22	7	23	36
40-49.99	14	4	15	23
50-59.99	6	2	8	10
60-69.99			3	3
Number	301		179	
Mean	15.00%	11.18%	21.87%	27.12%
Median	15.58%	13.80%	23.47%	26.28%
S.D.	12.8%	9.0%	15.4%	14.9%
S.E.	.738%	.519%	1.151%	1.114%

$$M_{AI} - M_{AII} = 3.82 > 2.98 \tilde{=} P = .001$$

$$M_{BI} - M_{BII} = 5.25 < 5.28 \tilde{=} P = .001$$

$$> 4.32 \tilde{=} P = .01$$

$$M_{AI} - M_{BI} = 6.87 > 4.52 \tilde{=} P = .001$$

3.69 in the opposite direction. A significant difference is to be found between Group A-Test I and Group B-Test I.

(4) *Out of Neighborhood Choices*: Subjects from changing neighborhoods (Group A) lost 3.82% in contacts from outside their own neighborhoods between Test I and Test II, while subjects from comparatively stable neighborhoods (Group B) gained 5.25% in these contacts during this period. A significant difference in this category is found to exist between Group A-Test I and Group B-Test I.

TABLE 5.
DIVERSITY-LOCATION PERCENTS OF 301 SUBJECTS FROM CHANGING NEIGHBORHOODS (GROUP A), AND OF 179 SUBJECTS FROM STABLE NEIGHBORHOODS (GROUP B). TEST I IS SIX MONTHS PRIOR TO TEST II.

	Group A		Group B	
Percent	Test I	Test II	Test I	Test II
0- 9.99	181	233	59	28
10-19.99	69	42	43	45
20-29.99	35	13	32	51
30-39.99	11	10	27	30
40-49.99	4	3	16	19
50-59.99	1		2	5
60-69.99				1
Number	301		179	
Mean	11.41%	8.65%	19.08%	24.22%
Median	8.26%	6.46%	17.09%	23.24%
S.D.	9.5%	7.9%	14.3%	13.4%
S.E.	.549%	.455%	1.069%	1.00%

$$M_{AI} - M_{AII} = 2.76 > 2.35 \tilde{=} P = .001$$

$$M_{BI} - M_{BII} = 5.14 > 4.82 \tilde{=} P = .001$$

$$M_{AI} - M_{BI} = 7.67 > 3.96 \tilde{=} P = .001$$

(5) *Choice of Unlikes Out of Neighborhood*: Some 11.41% (weighted for race) of the contacts that subjects in Group A made outside their own neigh-

borhoods at the beginning of the study was composed of individuals differing from themselves in race or religion. Six months later, this had fallen 2.76%. At the beginning of the study, the number of these contacts maintained by subjects in Group B was significantly greater than those in Group A. Within six months, Group B further increased its diversity-location percent, so that a significant difference in this category exists for Group B between Tests I and II.

Interpretation

(1) Subjects from changing neighborhoods show a smaller friendship range than do those from comparatively stable neighborhoods, and one that tends further to contract. The friendship range of persons in the nine to 16 year range from districts not affected by population shifts remains more or less constant over given periods of time.[12]

(2) There is no apparent difference in the degree to which individuals from changing neighborhoods, and under the age of 13, seek group attachments as compared to like individuals from relatively stable neighborhoods. But, beyond this age, persons from stable neighborhoods increasingly relax these ties, while those from changing neighborhoods continue to seek group support. This would suggest that age is an important factor in the matter of group participation.

(3) One factor leading to the contraction of the friendship range of subjects from changing neighborhoods is the discontinuance of voluntary relationships with unlikes. Where subjects from stable neighborhoods replace a number of their contacts with likes by contacts with unlikes, this is not true of subjects from changing neighborhoods. This would suggest that a consciousness of kind does not act as a bar to the outgoing tendencies of subjects from stable neighborhoods to the same extent as it does in subjects from changing neighborhoods.

(4) A second factor contributing to the contraction of the friendship range of subjects from changing neighborhoods is that the interpersonal relationships of these subjects become increasingly neighborhood-bound. Subjects from stable neighborhoods show considerably more freedom in finding friends from other districts. This finding is contrary to the expected once, since it would appear likely that persons in changing neighborhoods, unable to compensate lost friendships with likes by initiating new friend-

[12]Compare the findings of Helen H. Jennings in regard to the "emotional repertoire", *op. cit.*

ships with unlikes, would transfer their social activities to neighborhoods in which likes could be found.

(5) The evidence is overwhelmingly against the hypothesis that the day-to-day contact with unlikes that the changing neighborhood affords in any way predisposes greater inter-ethnic tolerance. Subjects from changing neighborhoods allow the tensions that arise from their geographical situation to affect relationships they make outside their own districts.

Neighborhood constitutes a determining factor in the temper of the voluntary social contacts individuals make. Exposure to locational insecurities makes for an increasingly restricted pattern of voluntary leisure-time associations, while locational security predisposes greater acceptance of unlikes.

The findings suggest that members of the residual portion of the moving-out group in changing neighborhoods develop a growing sense of social isolation from which they attempt to escape by increasing the intensity of their interpersonal contacts within their own districts. This sense of isolation is further increased by the individual's failure to find or to continue friendships outside his own neighborhood.

Discussion

This study has demonstrated, in agreement with the findings of Jennings,[13] that the individual maintains a certain range or repertoire in choice expression that finds its limits characteristic for him. The fact that this need is lessened in the individual in a changing community does not contradict this finding: it reveals, rather, that the social setting becomes the supportive understructure of this need and determines the level on which it operates. Only by taking the quality of this support into account can we discover the limits of the individual's emotional range at any given time. Hence, the emotional repertoire must be seen as combining *both need and occasion*, and not as need only as concluded by Jennings from subjects living in a stable community.

In other words, when the community underpinning of the emotional range becomes loosened, the individual seems incapable of expanding his social networks to overcome such loss as has occurred to him. Expansion of friendships by the individual, either by the addition of outsiders or by persons of unlike race or religion, *when his community is undergoing rapid*

[13]Helen H. Jennings, *op. cit.*, p. 58.

change and thereby cutting him off from formed relationships, is apparently incompatible with the retaining of friendships within this community.

The new lowered level of choice expression to which the individual is pushed is, however, basically in response to an "unreal" situation in that he is unwilling to recognize the changes. This presents a striking parallel to the kind of restriction that results from individual neurotic anxiety. It may be that the dynamic factor in the choice phenomena here reported is a denial of change with a consequent diminishing of the ability to adjust to a changing situation on any level other than the continuance of those kinds of interpersonal relationships that proved satisfactory in the past.[14]

This restriction has obvious implications for the community. The lowering of choice expression in resident members affects the whole community by resulting in a closing of relationships such that networks leading outward are progressively reduced, creating a fertile soil for clique formation.

[14]Paul Deutschberger, Adequacy and Conservation in Adjustment, *Psychiatry*, 9:109-116, 1946.

POLITICAL AND OCCUPATIONAL CLEAVAGES IN A HANOVERIAN VILLAGE, GERMANY,

A SOCIOMETRIC STUDY

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In the policy formation of the various allied governments now occupying Germany there are a few considerations more important than the basic structural and ideological alignments of the German people. Will many of those who were formerly staunch Nazis now become communists? Will the Nazi ideology tend to persist? What is the relationship between these ideologies and class and occupational affiliation? Are the leaders whom the various occupation forces have placed in responsible positions likely to be instrumental in developing sentiments which will make for friendly relations with the Western powers? These and many other similar questions could be answered in part if sociometric materials were available for sample areas in the former Reich.[1]

GERMAN MORALE AND NAZISM

The present study is a small portion of a much larger study which was planned in connection with the work of the Morale Division of the United States Strategic Bombing Survey. As a part of this larger study, the author had planned, through sociometric techniques, to relate the individuals interviewed in the bombing survey to the formal and informal groups they represented but only partial data on one village had been gathered when deadline orders were given for the entire study which restricted the morale study to the conventional sample survey procedures.

The data for this one village will be presented in the following paragraphs. The analysis of the cleavages in the village of Rietze here presented may have special significance in view of the fact that the bombing survey revealed that the more an individual citizen identified himself with the explicit ideology and organization of the Nazi Party, the higher the individual's

[1]This has been suggested by Dr. Moreno. See Jacob L. Moreno, *Who Shall Survive*, New York: Beacon House, 1934, and "The Sociometric View of the Community," *Journal of Educational Sociology*, Vol. 19, No. 9, May 1946. Dr. Moreno, founder of SOCIOMETRY has recommended that sociometric studies be made of all German communities as an aid to military government. See J. L. Moreno, "Sociometry and the Present Emergency in the European Peace," SOCIOMETRY, Vol. 8, No. 2, May 1945.

war supporting morale. The war supporting morale of the individual civilian, as measured in terms of willingness to accept unconditional surrender, absenteeism in industry, loss of faith in leaders, belief that one's own group or class was getting the worst of it, and such general conditions as defeatism, fear, hopelessness, fatalism, and war weariness, other things being equal, was for varying amounts of bombing, lower among non-Nazis than among Nazis. Furthermore, the more the Nazi doctrines were espoused or the higher the position held in the Nazi hierarchy, the greater the war supporting morale.

The Village of Rietze

These facts concerning war-supporting morale and political affiliation are based upon almost 4000 interviews with civilians taken from some 34 cities and communities with varying bombing experience, size, and cultural characteristics. Among these 34 areas the two Hanoverian villages of Rietze and Bissendorf manifested the highest war supporting morale. Both are located in the *Lueneburger Heide* north of Hanover. As indicated elsewhere[2] before the Nazis came to power the *Heide and Geeste* areas of Schleswig-Holstein and Hanover were among the most Nazified areas as indicated by the proportion of the valid votes cast for the Nazis in the free elections preceding 1933 (Table 1). Now that Nazism has revealed its true nature it may be difficult for many to believe that it attained such a stronghold among the "sober-minded and freedom-loving north Germans, who were not at all accustomed to a tradition of authoritarian government."[3] Nevertheless, no areas in the Reich brought the Nazi Party such large majorities as these two areas where the family-sized farm prevails and farming, except under favorable conditions, is marginal because of the poor sandy soils. These areas are less stratified socially than areas to the east and parts of the west where large estates with hired labor is the customary pattern. In the village of Rietze, although peasant traditions prevail, dairy farming, hog fattening and growing of asparagus tie the family economy to the fluctuations of the market. The fact that the peasant's wife may support her table and pay for most household operations from her poultry and garden does not prevent the loss of the farm if hog and other farm prices are low.

All villagers in Rietze are protestant and all speak low German among

[2]Charles P. Loomis and Allan Beegle, "The Spread of German Nazism in Rural Areas," *American Sociological Review*. Vol. II, No. 6, December 1946, pp. 724-734.

[3]Rudolph Heberle, *From Democracy to Nazism*, Baton Rouge: Louisiana State University Press, 1945, p. 21.

TABLE I

PERCENTAGES OF TOTAL VALID VOTE OBTAINED BY THE VARIOUS GROUPS IN HEIDE KREISE (MINOR CIVIL DIVISIONS), BURGDORF, CELLE, DANNENBERG, GIFHORN, PEINE, SOLTAU AND UELZEN, WHICH SURROUND RIETZE BEI PEINE IN SPECIFIED ELECTIONS.

Party[1]	Election Year 1932	1930	1928	1924	1920
	Percent	Percent	Percent	Percent	Percent
Nazis (NSDAP)	56	25	4	4	—
Socialist					
SPD	22	29	34	28	28
KPD	6	5	3	3	.4
USPD	—	—	—	—	12
Conservative (DNVP)	6	6	9	19	4
Liberal					
DDP	.5	4	3	3	4
DVP	.9	3	8	9	14
Landvolk	.2	4	—	—	—
Other Parties	8.4	24	39	34	37.6

[1]Description of political parties is as follows: NSDAP: *Nationalsozialistiche Deutsche Arbeiter Partei* (National Socialist German Labor Party) or "Nazis". DNVP: *Deutschnationale Volkspartei* (German People's Party) or "Conservatives". DVP *Deutsche Volkspartei* (German People's Party) or "Right Liberals". DDP: *Deutsche Demokratische Partei* (German Democratic Party) or "Democrats"—this party later changed its name to *Staatspartei*. SPD: *Sozialdemokratische Partei Deutschlands* (Social Democratic Party of Germany) or "Social Democrats". USPD: *Unabhaengige Sozialdemokratische Partei Deutschlands* (Independent Social Democratic Party of Germany) KPD: *Kommunistische Partei Deutschlands* (Communist Party of Germany) or "Communists". The last three parties are also referred to as "Labor" or "Socialist" or "Marxist" parties. Heberle, *Op. cit.*

themselves and at home. According to the school records the village was founded in 1548 and the house form and many vestiges of the old lower saxon culture still prevail. Characteristic of the area the chief recreational organizations are a song club (*Gesangverein*) and a marksman's club (*Schutzenverein*). The latter, however, had died before the beginning of the war.

Villagers remember the first world war and the hardships it brought. The rationing system was not as effective as that developed by the Nazis during this last war in which the exact records of the agricultural agents enabled the officials to place a quota of products on each farm which had to be delivered. Villagers sadly tell how during the first world war the local minister tried to live up to the ration regulations and so weakened the resistance of the children that two died. Farmers tried to get him to take food on the sly as all of them were doing but he desisted maintaining

that the minister must be the law-abiding example for others to follow. All villagers remember the depression and the more thrifty tell how they lost all their savings and recall how one "splerger" who had a 10,000 mark mortgage on his farm was able to pay it off with the sale of one cow.

The census shows that in 1892 there were 172, and in 1937, 260 inhabitants in the village. Between these two years the number of Hektars used for agricultural purposes increased from 322 to 434. Most of the increase was land reclaimed from the sandy Heide.

The northern part of *Kreis* Peine in which Rietze is located is in the *Heide* and forms a part of the Province of Hannover (Figure 1). Although

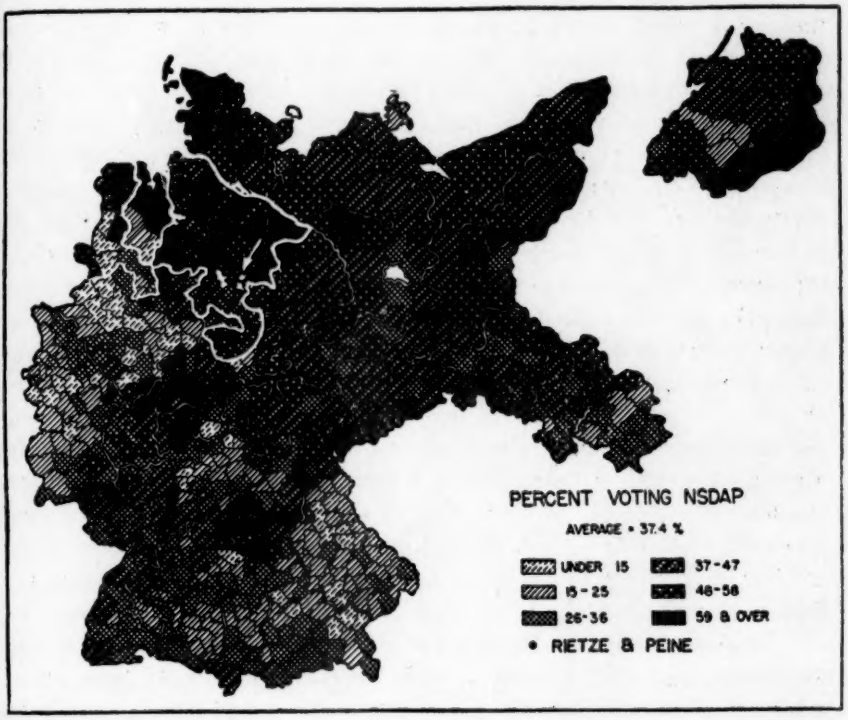

FIGURE 1.

Distribution of Nazi voting for rural areas with places over 10,000 eliminated, July 1932. Note the high proportion of persons voting for the Nazi party in Schleswig-Holstein, Hannover, Franconia, Hesse, and East Prussia. Proportions voting Nazi in Catholic areas are small. Note the location of the villages of Rietze and Peine, in the province of Hannover as the latter is outlined on the map.

Peine lies in an industrial area and consequently cast more socialist and fewer Nazi votes than did the *Heide* counties to the North, Rietze belongs ecologically and culturally with the *Heide*. It has, of course, been somewhat influenced by the industry to the south and to a certain extent reflects rural-urban cleavages but has retained its *Gemeinschaft*-like folk character. As Table 1 indicates, the *Kreise* which make up Rietze's cultural area cast over half of their votes for the Nazis in the July election in 1932. Here all parties and the non-voters of previous elections gave up votes for the Nazis in 1932.

The Impact of War on Rietze

Although villages such as Rietze fared relatively well during the war, the people tasted the bitterness of the war especially after the displaced persons began to ravage and plunder the countryside. Rietze is located in a part of the cultural area in which farmsteads customarily pass undivided to one heir but it is expected that refuge will be given to the families of other heirs in cases of misfortune. Thus, families of city relatives and many others who were bombed out lived in the village with their relatives during the war. At the time of the Strategic Bombing Survey in June and July there were 227 names of persons on the ration cards of the village who were listed as permanent residents. In addition there were 107 evacuees from all classes of society and parts of Germany, most of whom were old people, women and children who had been bombed out of cities. No one could live with these unfortunate people long without knowing of the horrors of war. One evacuee living in Rietze, a 35 year old mother, along with one other, were the only persons out of a household of 16 to escape during a phosphorus raid on Essen. She had been bombed out of both Essen and Bochum. From people with this type of experience, villagers learned much about the horrors of war. A few days before the survey group arrived, two children were blown to pieces by a dud bomb which had been lying in a field. This was no new type of experience to the evacuees in Rietze.

In another way the farmers and residents of Rietze learned to taste the bitter pill of war. Of a total of 54 males, aged 15 to 45, who had resided permanently in the village, 39 were in the armed forces. Only 7 had returned when this study was made and nine were reported dead or missing. Many others were assumed to be dead since no word had come from most of them for months. In the age group 30 to 35, half had already been reported dead or missing at the time the village was studied. Notwithstanding these experiences, the permanent residents of unbombed Rietze and an-

other village to the west, Bissendorf, registered higher morale than any of the 33 cities studied by the Bombing Survey.

Political Cleavages in Rietze

Bearing in mind that the study of civilian morale indicated that, other things being equal, the more Nazi the informant's philosophy and affiliations were, the higher his war-supporting morale was likely to be, the following analysis of party affiliations seem to have special significance. The extent to which value orientation and sentiments of the people are expressed through formal and informal organizational structure is an important consideration in evaluating the significance of the ideological factors. The social structure of the various social systems of Rietze were not analyzed in detail but the sociometric analysis of political and occupational cleavages indicates that the ideational elements involved in some of the political groupings are expressed in informal social structure. This will certainly be a relevant factor in any consideration of the persistence of ideological factors. It should not be necessary to caution social scientists that it would be dangerous to generalize from one village to the whole of Germany. However, the techniques employed here could be used in all types of community in Germany to ascertain whether the mutual aid and visiting patterns indicated that previous party affiliation and ideologies were being perpetuated.[3]

Of the 61 heads of households who were permanent residents of the village and for whom data were gathered, 21 belonged to the Nazi party at the time of the study, 23 were classified as Social Democrats, 6 classified as Communists, and 11 were classified as not being identified with any party. This classification is based upon dependable information from one of the leading farm families with whom the author had been intimate for more than 11 years. The information for non-Nazi party members reflects the attitude as of 1932. The basis for the analysis of cleavages was furnished by visiting patterns. It was assumed that those who visited together most were clique groups. To depict these cliques graphically the investigator found the five families with which each family visited most.

From these data the families which occupied strategic positions in the network of visiting relations as indicated in Figure 2 become evident. Also the data on visiting patterns furnished information to be used in measuring cleavages.

Of the 227 visiting relationships reported among the permanent residents studied in the village, 19 percent were between persons who were related by blood ties. However, there were no significant differences between the

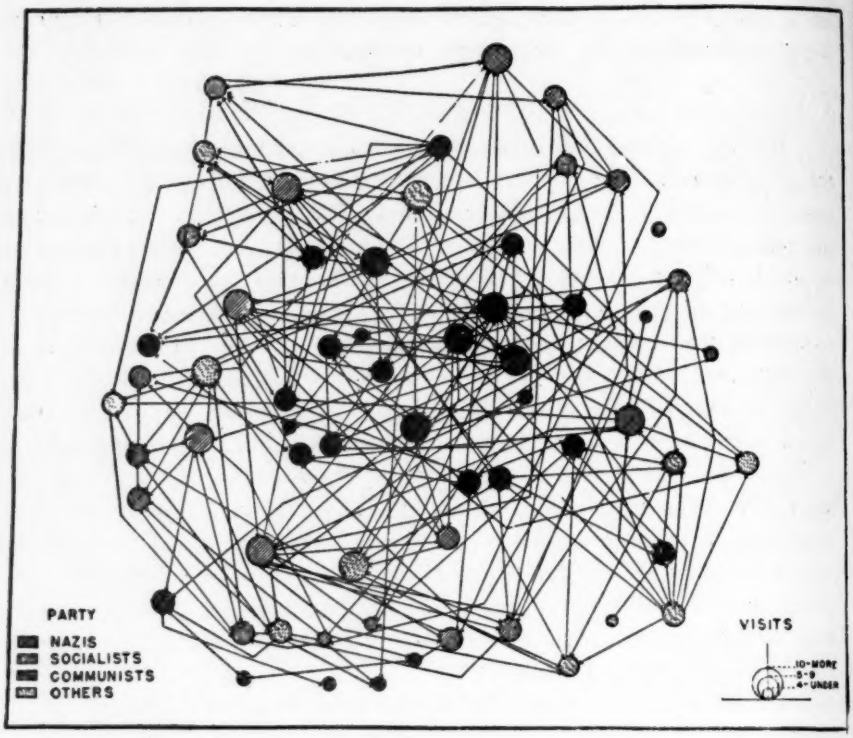

FIGURE 2.

Sociogram showing visiting relations among families classified by political parties and frequency with which they were visited, Rietze, Germany.

See table 2 for an analysis of in-group tendencies and cleavages. Note the key positions in the network of relationships held by the Nazi leaders. Although the communists exhibited strong in-group tendencies they are not in key positions.

various political groups with respect to in-group kinship relationships, except that none of the Communists had blood relatives in the village. Family ties did not follow party lines, as indicated by the fact that of all visiting relationships of Nazi with Nazi, 13 percent were between kinfolk and of all visiting relationships of Nazi with Non-Nazi, 22 percent were among kinfolk. For the Social Democrats these percentages were 15 percent and 17 percent, respectively.

MEASURE OF POLITICAL CLEAVAGES

If the total number of visiting relationships were found to be divided among the different groups in proportion to the number of families in the

groups there would be reason to doubt that cleavages existed.[4] Thus if the visits of the Nazis to other groups were distributed in the proportion that the families in these groups constitute of the total there would be reason to doubt that cleavages among the groups were great. The Nazis had 103 visiting relationships within the village. The Nazis constituted 34 percent of the familes; the socialists, 38 percent; the communists 10 percent and those with no definite affiliation 18 percent.[5] If visiting among the groups were determined by random choices, as might be the case if one took family names written on ballots two at a time from an urn, probability that visiting would indicate cleavages between political parties would depend on chance and various measures for the probability of such cleavages showing up are available. Assuming that the random situation would conform with the situation in which visiting were conducted so that each political group studied received visits from the Nazis in proportion to the number of families in the respective groups the 103 Nazi visiting relations would be divided so that 35 would go to Nazi families; 39 to Socialists; 10 to Communists and 19 to others. The actual observed relations were: 49, 32, 3 and 19, respectively. Thus if the number of visits were distributed in proportion to the number of Nazi families, 35 of the Nazi visits would have gone to Nazis and 68 to non-Nazis. Actually 49 went to Nazis and only 54 to non-Nazis. Could these differences be due to chance? The chi-square test offers a partial answer to this question. If the expected frequencies as determined above are subtracted from the observed frequencies and the result squared and divided by the expected frequency we have the chi square test. The probability of a chi square of a given size occurring due to chance once the degrees of freedom are known can be read from a table.

Table 2 offers a means of testing various hypothesis and indicates how the various tests for cleavage were computed. If we are interested in testing the hypothesis that Nazis direct their visiting relations without reference to whether the families visited are of the same political affiliation or not and that their visiting relations are distributed among the non-Nazis in proportion to the number of families in the groups specified we may add

[4]For a more detailed discussion of the measurement of cleavages by comparing actual relationships with frequencies of relationships which would be expected if visiting resulted from random-choice under various assumptions, see Charles Loomis, *Studies of Rural Social Organization*,. State College Book Store, East Lansing, Michigan, 1945, pp. 118 to 124 and Ch. 17.

[5]Nazis were party members in 1945. Other affiliations refer to parties for which votes were cast in 1932.

TABLE 2

COMPUTATIONS FOR CHI SQUARE MEASURES OF CLEAVAGES* AS DETERMINED BY VISITING RELATIONSHIPS REPORTED BY FAMILIES IN RIETZE BEI PEINE, GERMANY, 1945

	Direction of Visit	Observed No. of Visiting Relations (f)	Expected No. of Visiting Relations (f^1)	$\frac{(f-f^1)^2}{f^1}$ Chi Squares	P
1.	Nazi to Nazi**	49	35	5.60	
2.	Nazi to Socialist***	32	39	1.26	
3.	Nazi to Communist	3	10	4.90	
4.	Nazi to Other	19	19	0	
a.	Nazi to Socialist, Communist and Other	54	68	2.88	
A.	Total Nazi: Chi Squares: Sum of four items above or (Chi Squares: 1+2+3+4) (3df)	103		11.76	>.01
B.	Σ(Chi Squares items = 1+a) (1df) (21 Nazi Families: 34% of total)			8.48	>.01
5.	Socialist to Nazi	25	33	1.94	
6.	Socialist to Socialist	47	37	2.70	
7.	Socialist to Communist	5	10	2.50	
8.	Socialist to Other	20	17	.53	
b.	Socialist to Nazi, Communist, and Other	50	60	1.67	
C.	Total Socialist: (Chi Squares items: 5+6+7+8) (3df)	97		7.67	>.10

*I am indebted to Margaret Jarman Hagood for suggesting the procedures used in making the chi square analyses.

**Nazis were party members in 1945. Other affiliations refer to 1932.

***Social Democrats.

TABLE 2 (cont'd)

Direction of Visit	Observed No. of Visiting Relations (f)	Observed No. of Visiting Relations (f^1)	$\frac{(f-f^1)^2}{f^1}$ Chi Squares	P
D. Σ (Chi Squares items= 6+b) (1df) (23 Socialist Families: 38% of total)			4.37	>.05
9. Communist to Nazi	3	6	1.50	
10. Communist to Socialist	7	5	.17	
11. Communist to Communist	6	2	8.00	
12. Communist to Other	1	3	1.33	
c. Communist to Nazi, Socialist and Other	11	15	1.07	
E. Total Communists: (Chi Squares items: 9+10+ 11+12) (3df)	17		11.00	>.02
F. Σ (Chi Squares items= 11+c) (1df) (6 Communist Families: 10% of Total)			9.07	>.01
13. Other to Nazi	17	18	.05	
14. Other to Socialist	21	21	.00	
15. Other to Communist	5	5	.00	
16. Other to Other	11	10	.10	
d. Other to Nazi, Socialist and Communist	43	44	.02	
G. Total Other: (Chi Squares items: 13+14+ 15+16) (3df)	54		.15	>.99
H. Σ (Chi Squares items= 16+d) (1df) (11 Other Families: 18% of Total)	265		.12	>.80

TABLE 2 (cont'd)

Direction of Visit	Observed No. of Visiting Relations (f)	Observed No. of Visiting Relations (f^1)	$\frac{(f-f^1)^2}{f^1}$ Chi Squares	P
I. Sum of Chi Squares items =B+D+F+H) (3df)			22.04	>.001
J. Total Chi Squares items =A+C+E+G) (12df) (Grand Total of All Families: 61)			30.58	>.01

The chi squares to the right of the lines headed by the symbols B, D, F, and H, test the hypothesis that members of the political party indicated to the left direct their visiting relations without reference to whether the families visited are of the same political affiliation or not, and that their visiting relations are distributed among the groups specified and other groups of families in proportion to the number of the families in the group specified and the other groups. Thus the chi square of 8.48 (1 degree of freedom), tested the hypothesis that Nazis directed their visiting relations without reference to whether families visited are Nazis or not and that their visiting relations are distributed between Nazi and non-Nazi families in proportion to the number of families in the two groups. The chi square which tests this indicates that less than 1 time out of 100 would the observed results have been obtained from a sample of the size used if the hypothesis were true. These chi squares (to the right of lines B, D, F, and H) may be compared to indicate which group manifests the greater in-group cleavages. Thus, the Communists with a chi square of 9.07 manifests the greatest tendency towards in-group cleavages. They are followed by the Nazis with a chi square of 8.48, with one degree of freedom.

The chi squares to the right of the lines headed by the symbols A, C, E, and G test the hypothesis that the members of the political group indicated to the left direct their visiting relations without reference to the various party affiliations of families visited and that their visiting relations are distributed among families of different party affiliation in the community in proportion to the number of families in each of four party-affiliated groups. For the Nazis this chi square is 11.76 (3 degrees of freedom). The value for this chi square is >.01, which indicates that less than one time out of 100 would the observed results be obtained in a sample of the size used if the hypothesis were true.

A comparison of these chi squares, with 3 degrees of freedom, indicates which groups are more affected by the political affiliations generally. Thus the Nazis register a chi square of 11.76 as compared with 11.00 for the Communists.

The chi square to the right of symbol I, the sum of the chi squares to the right of the symbols B, D, F, and H, tests the hypothesis that visiting in the village is not affected by whether families are of the same party affiliation. Thus, for Rietze, the chi square value of 22.04 with three degrees of freedom indicates that visiting relations are relatively more frequent between families with the same party affiliation than between families of different party affiliations.

The chi square to the right of symbol J, the sum of the chi squares at the right of symbols A, C, E, and G, tests the hypothesis that visiting relations in the village are independent of the particular party affiliations of the family visited. The chi square of 30.58 based on 12 degrees of freedom is significant, indicating a basis for rejecting the hypothesis.

the chi square for the visiting relationships of Nazis to Nazis with the chi square of the visiting of Nazis with non-Nazis. Thus as indicated in Table 2, 5.60 added to 2.88 results in the test for the hypothesis as outlined. Since a chi square of 8.48 (1 degree of freedom) indicates that less than 1 time out of 100 would the observed results have been obtained from a sample of the size used if the hypothesis were true we have basis for its rejection. We may thus assume that in so far as our basis of comparison is meaningful and in so far as visiting reflects cleavages, cleavages between Nazis and non-Nazis existed. Since the size of the chi squares similarly computed for other groups constitutes a measure of cleavage one may easily determine which of the groups manifests the greatest in-groups cleavages. Thus the Communists with a chi square test of 9.07 manifests the greatest tendency toward in-group cleavages. They are followed by the Nazis with a chi square of 8.48, with one degree of freedom.

Another approach to the problem of ascertaining the characteristics of cleavage may be made from the above assumptions if the hypothesis is advanced that the Nazis direct their visiting relations without reference to whether families are Nazis, Social Democrats, Communists or others, and that their visiting relations are distributed among families of different party affiliation in the community in proportion to the number of families in each of the four party-affiliated groups. The chi square which tests this hypothesis is calculated by adding the chi squares calculated for the visiting relations of Nazi to Nazi (5.60) Nazi to Socialist (1.26), Nazi to Communist (4.90) and Nazi to others (0) which results in a chi square value of 11.76. (3 degrees of freedom.) The P value for this chi square is $>.01$ which indicates that less than one time out of 100 would the observed results be obtained in a sample of the size used if the hypothesis were true. We thus have further proof that cleavages exist. Chi squares similarly calculated for other groups as included in Table 2 indicate which groups are more affected by the political affiliations generally. Thus the Nazis register a chi square of 11.76 as compared with 11.00 for the Communists and only 7.67 for the Social Democrats.

The systemized arrangement of the chi squares in Table 2 makes it possible to consider the problem of political cleavage in Rietze as a general phenomena. Thus the sum of the chi squares to the right of symbols B, D. F, and H, (each of which tested the hypothesis that members of a given party directed their visiting relations without reference to whether the families visited are of the same political affiliation or not) tests the hypothesis that visiting in the village is not affected by whether families are of the

same party affiliation. For Rietze this chi square value is 22.04 (with three degrees of freedom). Since the measure is statistically significant the hypothesis must be rejected and we may conclude that visiting between families with the same party affiliation is more frequent than between families of different party affiliations.

Similarly we may test the hypothesis that visiting relations in the village are independent of the particular party affiliations of the family visited. The chi squares to the right of the symbols A, C, E, and G when added amount to 30.58 based on 12 degrees of freedom which is significant and indicates that the hypothesis must be rejected and that it is safe under the above assumptions to state that visiting relations in the village are affected by party affiliations of the members. Perhaps more important for our considerations is the convenience offered in Table 2 of comparing the in-group or cliquishness of the groups by means of the chi square values to the right of the symbols B, D, E and H and A, C, E, and G. From these comparisons it will be obvious to the reader that the Nazis and Communists excell in this tendency. The persons who had no political philosophy or interest showed little tendency to direct their visitations to any group in particular. This may be important in view of tendency for the areas having relatively many former non-voters to vote the Nazi ticket in the last free election of 1932.[6]

Occupational Cleavages

These cleavages call for an occupational analysis of the permanent members of the village. Of the 54 families for whom occupational data were available, 13 owned and operated family-sized farms of over seven acres and seven were small farmers having less than five acres of land. The remaining permanent families were composed of the school teacher, several evacuated professional people who had bought or built homes in the village, farm laborers, workers on the nearby railroad, and craftsmen.

The Nazi group for whom occupational data are available in 1945 was made up of nine farmers who owned an average of 93 acres per farmer, the teacher, three truck drivers, a baker, an innkeeper, a stone mason, and the wives and families of two army officers who had evacuated themselves from cities and bought houses in the village. Those who were classified as Social Democrats consisted of four farmers who owned an average of 60 acres of land, four small farmers with tiny holdings, four railroad workers,

[6] Charles P. Loomis and Allan Beegle. *op. cit.*

a watchman, a blacksmith, a butcher, a cabinetmaker, a seamstress, an engineer and several widows on pensions. The four Communists for whom occupational data are available included a small farmer, a stone mason, a common laborer and a widow. Of course, these Communists were of the tolerated type which were not liquidated in rural villages. In *Rietze,* at the time of the study, the Communist group was enjoying the defeat of the Nazis and defying the social classes above them.

Those in the village who have no party allegiance consist of two farmers who owned an average of 41 hectors of land, one small farmer, two rentiers, one railroad worker, one farm worker and two widows. Farming was more typical of the Nazis than any other political party. One-half of the Nazis were farmers and 17 percent of the non-Nazis were farmers. On the whole the well-to-do in the village were Nazis. As the sociometric chart, Figure 2 indicates the Nazi hold key positions in the network of relationships. The cleavages among the four occupational groups, irrespective of political affiliation, were measured for families residing permanently in the village. See Table 3. Families owning and operating more than five acres were classified as farmers. Land owners with less than five acres were classified as small farmers. Craftsmen and salaried workers were classified together and unskilled wage workers were classified as a separate group. By comparing the chi squares in Table 3 with those in Table 2 it is obvious that no political grouping in Rietze manifests more in-group cleavages in visiting relations than full time farmers, when considered irrespective of their political affiliation. Craftsmen and salaried workers manifest more in-group propensities than any group other than farmers. Thus in Table 3 the chi square to the right of the symbol B tests the hypothesis that operators of full sized farms direct their visiting relations without reference to whether families visited are peasant farms or not and that their visiting relations are distributed among the full time farmers and those who are not full time farmers in proportion to the number of families in the two groups. Since this chi square measure is 20.08 (with 1 degree of freedom) and since a measure of this size, could occur far less than 1 time out of a hundred due to chance we must reject the hypothesis. It is obvious that the full time farmers are an in-group and that cleavage exists between them and the other groups. By this same reasoning it is apparent that the other group manifesting the greatest cleavage is that including the craftsmen and salaried workers. The chi square measure which indicates the cleavage between the group of craftsmen grouped with salaried workers and non-craftsmen or salaried workers who had a tendency to join the Nazi party

TABLE 3

COMPUTATIONS* FOR CHI SQUARE MEASURES OF CLEAVAGE AMONG OCCUPATIONAL GROUPS AS DETERMINED BY VISITING RELATIONSHIPS REPORTED BY FAMILIES IN RIETZE BEI PEINE, GERMANY, 1945.

Direction of Visit	Observed Number of Visiting Relations (f)	Expected Number of Visiting Relations (f)	$(f-f^1)$	$(f-f^1)^2$	$\frac{(f-f^1)^2}{f^1}$ Chi Squares	P
1. Farmers to Farmers	53	32	+21	441	13.78	
2. Farmers to Small Farmers	19	25.5	− 6.5	42.25	1.65	
3. Farmers to Craftsmen and Salaried Workers	20	25.5	− 5.5	30.25	1.18	
4. Farmers to Workmen	10	19	− 9	81	4.26	
a. Farmers to Non-Farmers or Small Farmers, Craftsmen and Workmen	49	70	−21	441	6.30	
A. Total Farmers: Chi Squares = Sum of Four Items above or (1+2+3+4) (3df)					20.87	>.01
B. (Chi Squares items 1+a) (1df) (15 farmer families: 31% of total)	102				20.08	>.01
5. Small Farmers to Farmers	12	17	− 5	25	1.53	
6. Small Farmers to Small Farmers	17	14	+ 3	9	.64	
7. Small Farmers to Craftsmen and Salaried Workers	9	14	− 5	25	1.78	
8. Small Farmers to Workmen	18	11	+ 7	49	4.45	
b. Small Farmers to other than Small Farmers or to Farmers, Craftsmen and Salaried Workers and Workmen	49	42	+ 7	49	1.17	
C. Total Small Farmers: (Chi Squares items = 5+6+7+8) (3df)					8.40	>.05
D. (Chi Squares items 6+b) (1df) (12 Small Farmer Families: 25% of Total)					1.81	>.20

					1.81	>.20

TABLE 3 (Cont'd)

9. Craftsmen and Salaried Workers to Farmers	5	8	− 3	9	1.13	
10. Craftsmen and Salaried Workers to Small Farmers	4	6	− 2	4	.67	
11. Craftsmen and Salaried Workers to Craftsmen and Salaried Workers	14	6	+ 8	64	10.67	
12. Craftsmen and Salaried Workers to Workmen	2	5	− 3	9	1.80	
c. Craftsmen and Salaried Workers to Other or Farmer to Farmers, Small Farmers and Workmen	11	25	−14	196	7.84	
E. Total Craftsmen & Salaried Workers = Chi Squares items (9+10+11+12) (3df)					14.27	>.01
F. (Chi Squares items 11+C) (1df) (12 Craftsmen and Salaried Families; 24% of total)					18.51	>.01
13. Workmen to Farmers	3	7	− 4	16	2.29	
14. Workmen to Small Farmers	10	5	+ 5	25	5.00	
15. Workmen to Craftsmen and Salaried Workers	3	5	− 2	4	.80	
16. Workmen to Workmen	5	4	1	1	.25	
d. Workmen to Farmers, Small Farmers, Craftsmen, and Salaried Workers	16	17	− 1	1	.058	>.05
G. Total Workmen and Farmers: Chi Squares items = (13+14+15+16) (3df)					8.34	>.05
H. (Chi Squares items 16+d) (1df) (9 Workmen Families; 19% of total)					.83	>.50
I. Sum of Chi Squares = B+D+F+H (3df)					41.23	>.01
J. Total Chi Squares = (A+C+E+G) (12df)					51.88	>.01
(GRAND TOTAL: All Families 48)						

more than other groups, it is apparent that an occupational basis for the political cleavages exists in the village of Rietze.

Interestingly enough, the small farmers show a tendency to visit wage worker families relatively more than other groups and wage workers show a tendency to visit the small farmers relatively more than they visit other groups. With such small groups these latter measures are not statistically significant but future analysis may justify the practice of classifying German small farmers who work on large estates and elsewhere with workers rather than with farmers.

Cleavages Between Evacuees and Villagers

The evacuees from bombed English cities were in many cases notoriously maladjusted in their new homes. The German evacuees, who had suffered much more than most British evacuees, seemed to have adjusted better but they were seldom satisfied. In Rietze the visitations of the evacuees were studied as a partial measure of their adjustment in the village. As would be expected evacuees visited among themselves much more and with the village families much less than would have been the case if they had apportioned their relations to all families alike. The newcomers had not made themselves perfectly "at home".[7] There was continual complaint especially from those from the Rhein and Bavarian areas, where life is normally more *gemuetlich* than in Rietze, that these Hanoverians were too *stuer*. Most evacuees returned to their ruined cities as soon as possible.

These analysts do not answer the question posed earlier: Will the traces of Nazism fade out of the rural areas as the results of "green risings" in the United States have disappeared? Certainly the longing for *Gemeinschaft* and folk ties will not be lessened by the hectic times of the past months and the months to come if the past is any indication. The ravaging and burning on the part of the displaced persons from the east have substantiated the belief of villagers who do not know what happened in other countries, that Germanic peoples are more civilized than others.

Rapid change seldom makes rural people more secure and it is the theme of this paper that frustration, rapid change, and secularization contributed to the growth of the Nazi party in the rural areas. If mechanization

[7]The visiting relationships for evacuees in the village of Rietze are as follows: 41 evacuee families engaged in visiting relations, reporting a total of 50 visiting relationships, 59 native and evacuee families engaged in visiting relations, reporting a total of 45 visiting relationships. The chi square value of 5.3 indicates a significant cleavage.

is an index of change, we may expect more frustration if past trends continue. For example, in Peine, the *Kriese* in which Rietze is located, the number of tractors in use on farms by years are as follows: 1930—32, 1933—43, 1939—113, and 1945—243. The extent of the mechanization of Germany's agriculture during the Nazi regime and even during the war is not generally recognized.

At the moment the villagers, even though their morale is not so depressed as is the morale of millions of city dwellers, have had their fill not only of the war itself but also of the Nazi leaders who are generally blamed for getting them into and continuing the war.

DEPICTING INTER-CULTURAL RELATIONS

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Science so frequently is intelligible only to the scientist that it fails to serve its own social function. One of the great values of sociometry, however, lies in the fact that the complex data may be shown clearly, simply and intelligibly. In working with functioning groups we have found it of considerable importance to return the facts of social relations to the group leader (teacher, counsellor, supervisor) in the form of the target diagram (4). This eliminates the necessity of expressing cumbersome statistics and readily portrays the main facts of the sociography of the group.

SOCIOMETRY AND INTERCULTURAL EDUCATION

A new project has recently developed in Toronto. In the schools of a suburban area concern about race prejudice has arisen and a programme of inter-cultural education following the pattern of the Springfield plan (7) has been inaugurated. In order to ascertain what group cleavages exist and to appraise changes in the social relations brought about by this effort we have introduced sociometric tests.[1] We have attempted to depict the data from these in such a way as to clarify the social structure for ourselves and for the school administrators and teachers with whom we are participating. This article describes the technique which has been developed.

MODIFICATION OF THE TARGET DIAGRAM TO DEPICT INTER-CULTURAL RELATIONS

Using the four question sociometric test (5) which we have found suitable at the public school level and scoring it according to Bronfenbrenner's (1) method, the general sociometric status and the interpersonal relations were found. Three Grade V and two Grade VII classrooms were used. In the different classrooms the proportional size of the sub-groups varied. The intersex choices were so few that the boys and girls were treated as separate groups. The Jewish-Gentile prejudice was considered by the teachers to be the outstanding basis of cleavage, so the self-preference of each of these groups was determined by using Criswell's formula (3).

[1]This study, now in progress, will be reported in another article in about a year's time.

This places self-preference on a percentage basis. 100% self-preference occurs when the sub-group gives all the choices itself. Zero occurs when the choices are no greater than expected by chance. Self-preference scores were obtained for each of the four sub-groups (Jewish boys, Jewish girls, Gentile boys, Gentile girls) in each of the five classrooms. The self-preference scores varied from —17% to +96%, with the scores of all but two of the sub-groups being positive.

The statistical significance of the various self-preference percentages may be determined by applying (with only slight modifications) the method demonstrated by Bronfenbrenner (1) for finding the probability of inter-class choice. Bronfenbrenner gives as the probability of a person in one class (class *a* of two dichotomous classes) choosing another person in class *b*, the formula:

$$P_{a-b} = \frac{b}{N-1} \qquad \text{(xxiii) (1:384)}$$

Since in this particular study boys and girls are treated separately, *a* and *b* refer to the number of boys or girls in the Jewish and Gentile groups, and *N* is the total number of boys or girls. As the groups dealt with are not strictly dichotomous, since there is some inter-sex choosing, the maximum number of times an inter-group choice may occur is not the total number of choices the particular group has to distribute, but rather the actual number of choices the group gives to all members of the same sex. With this modification the computation of the index of probability remains as given by Bronfenbrenner.

From the data obtained in this study it has been found that a self-preference percentage of 30% or greater, yields a probability of less than .01.

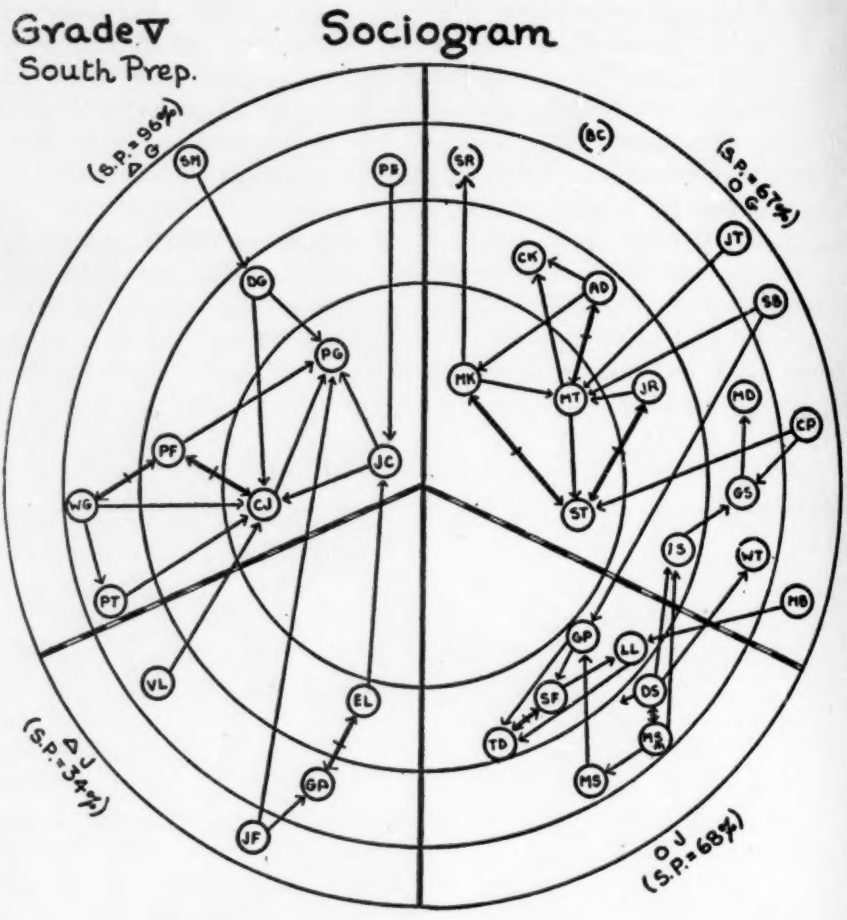
With these facts available, our problem was to reveal them in such a way that they would be readily apparent to the teachers and form a permanent record with which other groups, or the same group at other times, could be compared. Diagrams I and II show the results.

These diagrams are set up in the following manner:

(1) The social status and interpersonal relations are shown in the concentric circles in the usual way (4), (2).

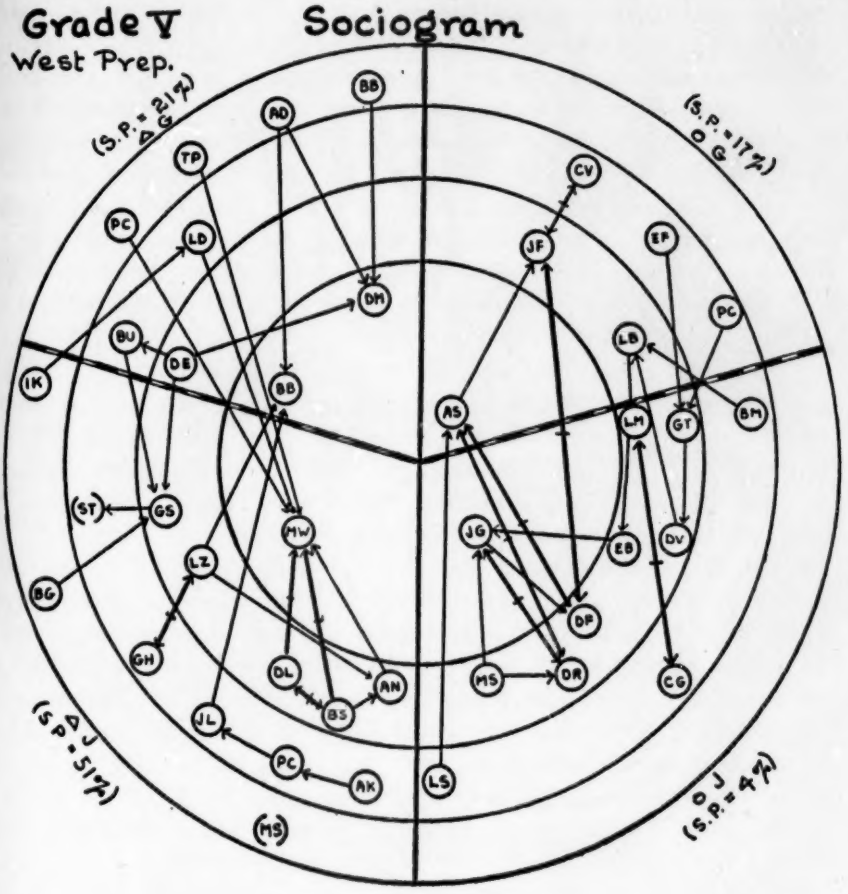
(2) The target is divided vertically with the boys on the left and the girls on the right.

(3) The Jews-Gentiles are divided by the broken line, each group being given a segment proportional to the number of that group in the classroom as a whole. Thus in Diagram II the Jewish children form a larger proportion of the class than in Diagram I.



(4) The amount of self-preference each sub-group shows is indicated immediately outside that sub-group's segment. This is done numerically. It could more vividly be shown by drawing a fifth circle and shading in the proportion of it representing the percentage.

(5) Finally, these sociograms are photographed so that each classroom teacher can have a copy and additional ones be available for the principal, research workers, students, etc.



SOME COMMENTS

Immediately on inspecting these sociograms certain points are apparent.

(1) The relative status of Jewish and Gentile children. In the diagrams shown the Jewish children are found at all levels of general social status. In Diagram I, however, none are in the highest and only one in the lowest positions. They occupy a middle position. In inspecting diagrams of the five rooms generally, however, they seem to hold positions of leadership and of isolation and middle status to about the same extent as in most sociograms of homogeneous groups.

(2) The inter-cultural contacts. Immediately it can be seen which

children are sending dominant choices across the boundaries and whether these are Jewish or Gentile children and whether they are reciprocated or not. As our major project is based on interest not in race-cleavage as such but in inter-race association, these cross-barrier choices may indicate a focal point for effort in developing better inter-cultural relations. To the general Springfield plan of inter-cultural education we intend to add social guidance by using these non-prejudiced children as key people in various projects and inter-personal activities. It should be noted that these cross-barrier choices are found at every level of general social status and are reciprocated in a sufficient number of cases in the five classrooms to make possible a study of Jewish-Gentile friendship (6).

(3) Size of the sub-group and degree of self-preference. If one sub-group is very small, that is, having three members or less, it is obvious that the tests which ask for three choices on each criterion force the subjects in this group to choose outside their own sub-group and disallows subjects of other sub-groups to give all their choices to it. Above this minimum, however, there is no reason in the statistics per se why there should be any relation between size of group and amount of self-preference. This is supposedly overcome by the formula which is based on number of choices over those which would be received by chance regardless of the actual number of subjects making up the sub-group. There is some indication, however, that the size of the sub-group may influence the amount of self-preference. On correlating the number of subjects in the 20 sub-groups studied with the percentage of self-preference shown a rank correlation of +.28 is obtained. A product-moment, however, reduces this to +.12. If on further investigation there is a true relationship between size of sub-group and amount of self-preference, this may be due to (a) the rather complex statistical relations underlying sociometry, or (b) an important social factor to be taken into account in attempting to organize groups to better inter-cultural relationships.

Summary

A method for depicting the complexities of sociometric status, inter-personal and inter-cultural relationships has been described and its uses indicated. Some of the factors and problems associated with these are outlined.

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A MATRIX APPROACH TO THE ANALYSIS OF SOCIOMETRIC DATA:

Preliminary Report

Elaine Forsyth and Leo Katz

One of the best-known techniques of group analysis is that outlined by Moreno (4) in *Who Shall Survive?* The basic data for this analysis are derived from the sociometric test, which in Moreno's definition "consists in an individual choosing his associates for any group of which he is, or might become a member." The usual procedure for eliciting positive and negative choices is to ask the subject to answer such questions as:

> With whom do you wish to sit?
> With which people do you definitely not want to sit?
> With whom do you wish to work?
> With which people do you definitely not want to work?

Moreno maintains that the promise of action to result from the choices is the required motivating force insuring reliable and valid responses. Other, (2) later investigators departing from this viewpoint have changed the type of question. For example:

> Who are your best friends in this group, people you like to run around with? Name one, two, three, or more, or don't name any, as you wish.
>
> We don't all like the same people. Name one, two, three or more in this group whom you definitely do not like.

Choices are made within a specified indicated group—a club, a home-room, a class, a church, a factory. Statements concerning the status of an individual, then, can be made only with respect to the particular group being tested. As a rule subjects are given complete freedom to indicate as many or as few positive and negative choices as they wish. Occasionally, for particular experiments the number is limited to two, five, ten, or some other arbitrary number (1). Numerous technical problems are raised by these varying conditions surrounding the measurement—size of group, type of question, number of choices, limited or unlimited, and at present not much is known of the effects of such variations on the results. It is not the purpose of this paper, however, to discuss these problems. This paper is concerned only with methods of presenting the results of the sociometric test.

As a general rule, the results of sociometric testing are presented by means of a diagram or graph called a *sociogram* which has for its purpose the illustration of the structure of the group, with its subgroups, cliques, leaders, isolates, and rejectees. The *sociogram*[1] has obvious advantages over verbal descriptions, but it is apt to be confusing to the reader, especially if the number of subjects is large. At present the sociogram must be built by a process of trial and error, which produces the unhappy result that different investigators using the same data build as many different sociograms as there are investigators. Northway (5) has developed a "target-area"[2] device which obviates this difficulty to a certain extent. Even with the gain in systematic placement of individuals afforded by use of this device, the resulting sociograms tend to become rather chaotic if all the data is preserved. The present paper has grown out of an attempt to preserve all the data and present it in an orderly, meaningful manner.

The Matrix Approach

To present sociometric data more objectively, and to make possible a more detailed analysis of group structure, an approach is proposed in which a complete matrix of positive and negative choices is utilized. In starting with the matrix of choices, it is assumed that an individual may choose, reject or ignore each other person in the group, and that his choices and rejections are not limited in number. There is some question as to whether it should also be assumed that each individual chooses himself. It is proposed, in order to keep the matrix general, to use a special mark to designate the individual self choice. We start, then, with a matrix of dimension N x N corresponding to the group of N individuals. The entry in the fourth row and eighth column, e.g., represents the fourth person's feeling toward the eighth. The matrix is comprised of x's along the main diagonal for the self-choices, +'s for positive choices, —'s for negative choices or rejections, and blanks for indifference or no mention. Figure 1 shows the form in which raw data are recorded:

In essence the method of manipulating the matrix consists of re-arranging the rows and columns in a systematic manner to produce a new matrix which exhibits the group structure graphically in a standard form. From the standpoints of construction and of interpretation this form of presen-

[1]For the illustration of a sociogram see Moreno, J. L., *Who Shall Survive?*

[2]For the illustration of a target diagram see Northway, Mary L., *A Method for Depicting Social Relationships Obtained by Sociometric Testing.*

	Joe	Mary	Bill	John	Jane
Joe	×	+	+		
Mary	+	×		−	
Bill	−		×	−	
John		+		×	
Jane	+				×

FIGURE 1.

Read Figure 1 horizontally thus, Joe chooses Mary and Bill and is indifferent to John and Jane. Read column 1 thus, Joe is chosen by Mary and Jane, and rejected by Bill.

tation of sociometric data is superior to the sociogram. We shall first present in some detail the procedure for manipulating the matrix and then discuss some of the consequences, illustrating with an example taken from Moreno's work.

MANIPULATING THE MATRIX

1. *Building the Subgroups.* First select any pair of individuals between whom there exists a mutual positive choice. The rows and columns corresponding to this pair are shifted so that the pair appears in the upper lefthand corner of the matrix. Any other individual in the group who is chosen by both of the original pair will appear in the matrix to have a pair of plus signs in the two rows running across the top of the matrix. If there is any such individual, he is added to the others by shifting his row and column to the third positions to make a subgroup of three. If it is impossible to find anyone chosen by both the original members of the group, the two vertical columns corresponding to the original subgroup may be examined for some person who chooses both members. If an individual choosing both is also chosen by one of them, that individual may be added to the subgroup. In either event, we now have three individuals, each of whom has been chosen by at least one of the remaining two. Adopting the principle that another person may be added to an established subgroup if he is chosen by half or more of the members of the subgroup, we now look for someone who has been chosen by at least two of the three. This process continues, individuals being added and previous members of the subgroup being rechecked at each stage to make sure that at least half of the enlarged subgroup has chosen each member. When no additional person can be added, it is assumed that the subgroup is complete. We now proceed with the matrix reduced by the deletion of N_1 rows and columns corresponding to the N_1 members of the first group. Select again any two individuals making a mutual positive choice and proceed to build up a second subgroup of N_2

members. The process continues as long as subgroups can be formed in this way. The result of this part of the manipulation is a series of subgroups appearing as principal minors of the matrix, in each of which half or more of all choices are positive choices, followed by a number of individuals belonging to no particular subgroup.

2. *Arrangement of subgroups.* For every pair of subgroups formed as above, there are two minors of the matrix, at the intersections of blocks of rows and columns, corresponding to the subgroups. The proportion of rejects or minus signs measures the extent of rejection between the two groups. Rearrange the order of the groups so that the two groups having greatest mutual rejection, as measured by proportion of minus signs, are at the extreme ends of the principal diagonal and the others appear inside in order of diminishing amounts of rejection. This procedure has the effect of moving blocks of minus signs to the upper righthand and lower lefthand corners of the matrix.

3. *Arrangement of non-grouped individuals.* An individual who is not a member may be a satellite of a subgroup in either of two ways. He may choose half or more of the members of the subgroup and be rejected or ignored, or he may be chosen not quite enough to be considered a member of the subgroup. We may indicate this orbital relation by placing the first type at the upper lefthand boundary of the subgroup and the second type at the lower righthand. If an individual is a satellite in both senses the second should take precedence. Those individuals remaining after this operation who are neither in a subgroup nor satellites may be considered to be the genuine isolates in the group.

4. *Cores of subgroups.* One final refinement is indicated by the orbital relationship outlined above. The various members of a single subgroup may be rearranged so that the tighter-knit portion of the group appears at the center as a core. In this way, the subgroups emerge as a tight core surrounded by subsidiary members, in turn surrounded by satellites who are not properly an integral part of the subgroup. Those appearing at the extreme corners of the matrix are the subgroups having the greatest intergroup rejection. Isolates will appear at or near the center of the matrix. Thus, there is no order relationship between the groups at the upper left and lower right. Both are extreme but neither is "better" in any sense.

Once the basic pattern has been produced as a result of these four steps, it may prove desirable to shift some of the matrix around in order to emphasize or illustrate a particular point. However, the basic pattern should be much the same regardless of who has performed the manipulation.

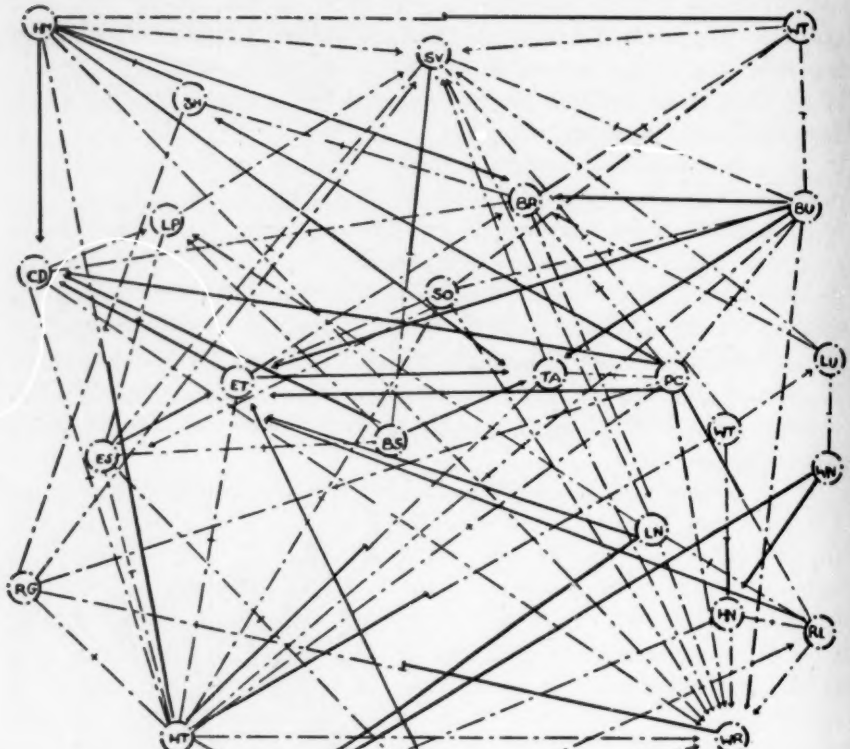

FIGURE 2.

STRUCTURE OF A COTTAGE FAMILY-C4

25 individuals; isolated 0; pairs 28; mutual rejections 1; incompatible pairs 8; chains 2; triangles 4, squares 5, circles 2, stars 7. Distribution 77% Attractions, 23% Rejections. Type of organization, balanced.

Black lines = repulsions. Dot dash lines = attractions. Onesided repulsion or attraction indicated by a line with an arrow. Mutual attraction or repulsion (pairs) indicated by dash across middle of line.

Figure 2 has been reproduced from Moreno (4) and represents the sociometric data collected from Cottage 4 of the New York State Training School for Girls at Hudson, New York. In figure 3, the same data is shown in matrix configuration. In this form, all the information has equal weight, no relations being obscured by reason of unfortunate placing of individuals.

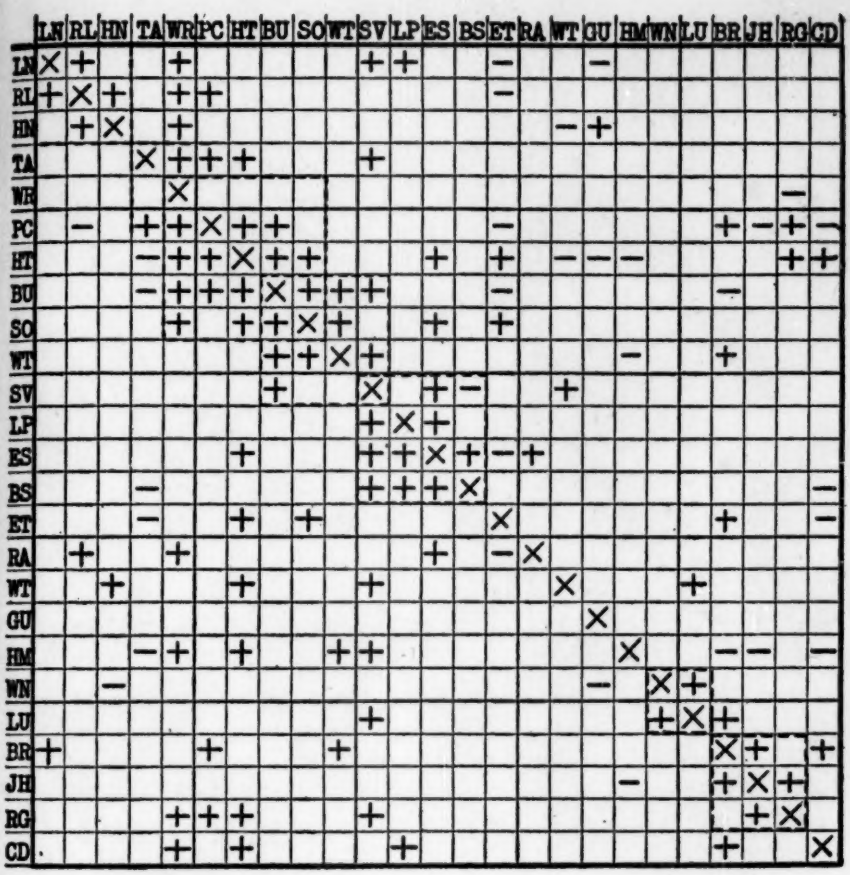

FIGURE 3.

Also, some of the secondary relationships are brought to the surface. The subgroup structure has been indicated by dotted lines.

Looking at the matrix, we see that the second subgroup is the largest and contains the major star of the entire group (WR). The first subgroup is connected to the second through their choice of WR, but are not chosen at all by the members of that subgroup. One individual (TA) who is not attached to any subgroup chooses three of the five in the second subgroup but is rejected. It is probable that she would like to join the group but has not been successful in getting herself accepted. She is a satellite of what we have called the first type. The unusual overlapping of the third

subgroup on the second and fourth indicates that it is in a state of flux; either it is in process of dissolution with BU and SO drifting one way and SV the other, or it is in process of formation, recruiting members from the other two subgroups. A subsequent check would indicate which is the case.

Considering the positions of the isolates, ET seems to have antagonized some of the members of the second subgroup; but for this, she might have been included in that group. RA, WT, GU and HM seem to be true isolates without any particular pattern of rejections. HM, however, rejects three of the four members of the last subgroup, indicating a concentrated rejection directed against this group. WN and LU, who are otherwise isolates, have formed a mutual bond.

The last subgroup has a curious connection with the second. RG apparently would like to be a member of the second group but is rejected by the leader WR. This rejection is the more significant since it is the only choice, positive or negative, that WR makes. RG, then, forms her own group, none of whom rejects members of WR's group but each of whom is rejected by someone in the WR subgroup. This is the only evidence in the entire group of inter-subgroup potential conflict.

We have departed from the basic matrix pattern in placing the first subgroup in that position. This was done in order to make clear the relationship of this group to the second through the leader of the second.

The process has the obvious advantage that different investigators will tend to produce the same or very similar matrices (possibly reversed in order) from the same data. Interpretation of the final matrix pattern is fairly simple. Ganging together is indicated by the principal minors of the matrix; extent of potential conflict between subgroups is indicated by the proportions of rejections in the two non-principal minors at the intersections. Also, the direction of conflict between two subgroups is made apparent as, in the example above, where there is rejection of one group by a second while the second does not reject the first. The relative permanence of the group structure is indicated in terms of the extent to which the subgroups are well-knit and have absorbed satellites. Stars in the group are indicated by large numbers of positive choices appearing in vertical columns of the matrix. Individuals rejected by the group are indicated by negative signs in a vertical column. There is further indication of the pattern of rejection, which is not obvious from the sociogram, in that the matrix will indicate whether a person is rejected particularly by members of one subgroup or is rejected indiscriminately by the group as a whole.

It also seems possible that numerical standards might be developed as

to the "well-knittedness" of a group. There is the further possibility that with development of numerical standards the group as a whole can be characterized in terms of the number, size and relationship of the subgroups, the cohesiveness of the various subgroups, and the number of isolates left in the group.

At present, manipulation of rows and columns in the matrix is a somewhat cumbersome process. Various mechanical methods have been devised but are not wholly satisfactory. It is hoped that a mechanical means will be devised which will materially reduce the labor involved and permit application of these principles to mass data by any investigator. The present approach was developed in attempting to handle more effectively data collected by the Detroit Citizenship Education Study Staff.

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SOCIOGRAM AND SOCIOMATRIX

A Note to the Paper by Forsyth and Katz

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Efforts of improving the sociogram and the sociomatrix have been made by various authors (Northway, Dodd, Jennings, Bronfenbrenner, etc.). The attempt of Forsyth and Katz is a valuable contribution in this direction. However, a careful comparison of the sociogram and the sociomatrix contained in their article, both presenting the same sociometric data, does not seem to meet their claim that the sociomatrix is superior and more objective in its presentation than the sociogram. Except for onesided choices or rejections, the matrix offers difficulties. Already pair relations are hard to find, but when it comes to more complex structures as triangles, chain relations, and stars, the sociogram offers many advantages, direct visibility and better opportunities for precise observation. Take for instance a triangle like HT-PC-BU. It is fairly easy to detect in the sociogram, but unless you know from the sociogram or otherwise, that these three individuals form a triangle, one finds it difficult to trace it in the matrix. Or take for instance, the chain relation HT-CD-SV-BU-PC-HT. This chain is easy to follow up in the sociogram but practically impossible to detect in the matrix. Another illustration is the star WR. On matrix and sociogram one can easily see all the individuals choosing WR, but the fact that WR rejects RG and consequently enters into conflict with a key individual (RG) of an important structure consisting of RG-DN-BR-WT-BU, is not noticeable to the examiner of the matrix.

I agree with the authors, however, that the sociogram is badly in need of improvement. The most important task ahead of us it seems to me is to establish *a set of rules* according to which sociograms are to be built.*

Up to now sociogram and sociomatrix each offered certain advantages. They supplement each other. In teaching sociometry the sociogram is more plastic and offers an interrelated whole of the group structure to the eye of the student. He has it all before him instead of having to look for the bits in a matrix and piecing them together in his mind. In research work they should be used jointly. However, I believe that a synthesis between

*In the next issue of SOCIOMETRY, Vol. 10, No. 1, I shall describe in "Building a Sociogram," a follow-up of this article, a set of simple rules.

sociogram and sociomatrix is possible. Technicians of the matrix should try more and more to put into it what is missing but available in the sociogram (Forsyth and Katz by arranging the subgroups move into this direction). The technicians of the sociogram should learn from matrix construction and introduce into sociogram building the elements of advantage there.

PROBLEMS OF HUMAN RELATIONS IN INDUSTRY*

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I.

This paper presents a brief summary of some recent social science research which seems to be of extreme importance to business and industry. We all know that modern industry is the offspring of the physical sciences, that its material production is dependent upon "pure" research. But production of material goods and services is not the sole function of business and industry. Of co-equal importance is its function of giving *meaning* to factory work, of producing human satisfactions on the job. The brilliant success achieved by modern industry in its first function has not been matched by its performance in the second. The rule-of-thumb methods and the traditional wisdom which sufficed in the management of small groups of workers in the pre-industrial period proved inadequate when the Industrial Revolution demanded the interweaving of the cooperative efforts of hundreds or of thousands of human beings in a single plant. Social science should have been prepared to step in at that point to assist industry with its human problems as the physical sciences assist it in production. However, there was no experimental social science capable of performing this task. To an important degree the human misery caused by the Industrial Revolution lent immense urgency to the development of that science. However, it has taken one hundred years for social science to come abreast of the human problems posed by modern industrial organization. And only within the past two decades have the experimental investigations of social scientists begun to yield results which can be applied to the human problems of industry with something of the same confidence that accompanies application of the physical sciences to non-human factors in industry.

Several independent lines of research have converged to create this significant trend in social science, of which two will be discussed in this paper. One is the work done by the sociometrists, led by J. L. Moreno, which has produced results that mark the first step in what might be called

*The author wishes to acknowledge with gratitude indispensible aid received from Dr. Joseph Bailey, now Visiting Fellow at the Graduate School of Business Administration of Harvard University, in the preparation of this article.

"depth-sociology" and "microsociology."[1] The other is the investigations of the Graduate School of Business Administration of Harvard University, under the leadership of Wallace B. Donham and Elton Mayo.

The sociometrists, working from a broadly-based interest in human society as a whole, have concentrated on intensive study of the social structure and functioning of human institutions. Using "sociometric methods" of analysis, measurement, observation and interview, they have penetrated beneath the familiar manifest social configurations—schools, workshops, families, clubs, communities—and have uncovered the dynamic social and psychological forces which underlie them, namely, the attractions and repulsions which individuals spontaneously feel for others when meeting face-to-face, and which form the bases for their choice of collaborators for any purpose, whether in a factory, a school, a college class, a prison, a community center, an office, or a dinner party. In every group which they have studied, the sociometrists have found that these forces of attraction and repulsion, and the emotions underlying them, form characteristic patterns which differ significantly from structures formed by "chance"; and that these patterns recur with such regularity as to justify the hypothesis that they are universal. Sociometrists have concluded, therefore, that human interrelations require the careful delineation and demarcation of a special field of science and have called this field *sociometry* (socius and metrum). Its purpose is systematic investigation of human inter-action phenomena. They have developed a) a set of sociometric instruments, b) a number of concepts and hypotheses which—although first identified by sociometric methods—can be roughly verified by any other method adapted to the problem.

The Harvard scientists have concentrated on the study of human behavior in mass-production industries. Using largely observation and skilled interviewing for the collection of data, they have shown like the sociometrists that within such industries, the workers do not constitute an unorganized mass of anonymous cogs tending machines, but that on the contrary, individuals who work together form differentiated, informal groups which develop group attitudes and mutually acceptable ways of behaving; that these exert the strongest kind of influence upon output rates, morale, employee cooperation with, or resistance to, management, upon absenteeism and labor turnover; that these group attitudes are more powerful than economic incentives in determining the worker's attitude towards his job.

[1]See J. L. Moreno, "Sociometry, Comtism and Marxism," SOCIOMETRY, Vol. 8, No. 2, 1945.

Working independently, these two lines of research thus reinforce and support each other. The Harvard scientists, having pierced beneath the symbolic facade "labor force" or "factory hands", and having discovered the concrete, interrelated nucleii which form the underlying reality of factory organization, have called the attention of industrialists to the necessity of taking these units into account in all administrative arrangements and executive policies. The sociometrists, having penetrated even more deeply below the surface of social appearances, having discovered the causations, regularities, and laws which make the dynamic mixture of these nuclear, informal groups comprehensible, and their interrelations intelligible, have laid the groundwork for a science which will aid management to produce human satisfactions as well as material goods, and to make factory work a satisfying way of life.

In the following pages, the attempt will be made to set these researches in the historical framework which gives them significance and urgency; to summarize their conclusions and to show that they constitute an integrally related unit of scientific knowledge.

II.

In the study of industry, we must not start with industry, but with the nature of man. The human being is, in essence, a system of energy—which implies a continuum of *action*. The highest and most intense gratification for every human being is derived from action, the results of which are at once rewarding for him and constructive and admirable *from the standpoint of his society*. Therefore, the concern of every administrator of a social institution—whether it be industry, government, education, a political party, or social work—must concern himself, in the last analysis, with the means through which human energy is released in gratifying, constructive, and creative ways. In doing so, he must take into account not only the individual human being, but also the social groups—*his personal society*—of which the individual is a member. The nature of man imposes this imperative upon him.

Underlining of the phrase *his personal society* in the sentence above is used to draw attention to the fact that the word society, as applied to an aggregate of human beings organized under a particular social system, is an impersonal *abstraction*. Actually, concretely, experientially, society for any individual is the *sum-total of face-to-face relationships* within which he

lives and moves and has his being.[2] Or, expressed in more materialistic terms, it is the total number of other human beings in his environment to whom he responds emotionally, for whom he feels regard or dislike, and who in turn respond to him, attach value to him or reject him.

This utterly real, wholly concrete, social unit has never been properly baptized by theoretical social scientists. Anthropologists seem to mean such a unit when they use the term "in-group" or "sub-culture". Sociologists often appear to have such a unit in mind when they use "group", "grouping", "sub-group", or "community". Unfortunately, however, sociologists also use the term "group" to designate other social categories, such as racial, religious, or cultural aggregates. "Community" is another equally ambiguous word. It is indiscriminately applied to: a) the totality of systems of interpersonal relationships within a specific geographical area; b) the concept of "any area of common interest".[3] The word community describes the kind of personalized society here designated only when its meaning is restricted to small, relatively isolated "in-groups" which possess a common culture and common interests. The above semantic excursion is not a digression. It is required to emphasize that the term *his society*, as here used, is something highly concrete and empirical, different in concept and meaning from the usual abstraction "society", so loosely employed today. The importance of the distinction in the context of this paper will appear later.

In our contemporary social system, earning a living consumes more of the time of each average individual than any one other of his activities. It is obvious, therefore, that this expenditure of time should be gratifying, constructive, and creative from the point of view both of the individual and of his society. It appears, however, that work in modern industrial enterprises does not generally meet this test. The overwhelming material benefits which modern technology has conferred on the populations of the Western world have not, apparently, carried with them corresponding psychological and immaterial satisfactions, so far as the majority of workers are concerned. The widespread, increasing severity of industrial strife appears to indicate that modern industrial and economic organization is deficient in this respect.

If the assumpton is correct that human beings must find their work gratifying in the sense defined above, then the fact that modern industry

[2]Cf. Linton, Ralph, *The Study of Man*, Appleton-Century, 1935, Chap. VII.

[3]Cf. McIver, Robert M., *Community, A Sociological Study*, Macmillan, 3rd edition, 1924. Also, van Kleeck, Mary, *Towards an Industrial Sociology*, American Sociological Review, October, 1946.

fails to furnish this opportunity for the majority of its employees must react unfavorably on our social structure.[4] There is considerable evidence that this is so in the cleavages, the disorganization, the strife, the sense of futility, and the lack of teamwork which are notable in the contemporary social scene, and which have been a serious concern since the Industrial Revolution.[5] In primitive societies, work, religion, education, family life, recreation, were all interwoven and interrelated in such a way as to make the life of the human being an integrated whole. None of these aspects of living was segregated from another to form a separate institution. Modern industry erected work into a separate institution and in so doing, and by drawing agglomerations of human beings together for work, it ripped asunder the integrations built up over thousands of years of human living together in small units. Consequently, the question has often been asked: Is machine industry inherently inimical to the welfare of human beings?

The question was raised insistently in the United States about the turn of this century, following an upsurge of strikes accompanied by violence, such as those of the railroad workers led by Eugene Debs and the miners of the Homestead and Colorado Fuel and Iron Companies.

Relying on the 19th century concept of "an economic man",[6] whose propensity for acquisition was the central motivation for work, progressive industrialists of that time assumed that wage rises were all that was needed to content the workers. In fact, some of the strikers' overt demands were couched in such terms. To meet such demands, increasing efficiency in operations was required. This was the heyday of the development of "efficiency engineering". However, as practise in this field became increasingly expert, it was discovered that workers did not respond as expected to the stimuli of more pay, less fatiguing work, and shorter hours. In consequence, the more perceptive thinkers became aware that there must be unexplored factors in the industrial situation, factors obdurate against the pressures of wage incentives.

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[4]The assumption is that function and structure are reciprocally interdependent. Cf. Conklin, Edwin G., *Man, Real and Ideal,* Scribners, 1943, Chap. 9.

[5]For an excellent description of this situation, see Mayo, Elton, *The Human Problems of an Industrial Civilization,* Division of Research, Graduate School of Business Administration, Harvard University, 1933, Chaps. VI and VII. Also, *The Social Problems of an Industrial Civilization,* (Same publishers), 1945, Chap. 1. For an historical anlaysis, see Polanyi, Karl, *The Great Transformation,* Farrar and Rinehart, 1944, Chaps. 3, 7, 10, 11, 14.

[6]For an excellent summary of this "climate of opinion", see Mayo, Elton, *The Social Problems of an Industrial Civilization,* Chap. 2.

Next developments in the elusive search for ways of increasing worker-satisfaction were two-fold: First, awareness increased that "labor relations" constituted a definite phase of production, demanding specialized skills and techniques; Second, relatively widespread efforts were initiated to provide workers with improved conditions of living *outside* the plants. The first trend resulted in establishment of personnel departments, more careful placement policies, in-service training, aptitude testing, formation of "employee associations", better sanitation, safety measures, etc.; in exploratory studies of the causes of fatigue, remedies for it, and the movement called "rationalization", designed to increase both productivity and worker-satisfaction. Management-sponsored plans for insurance, pensions, and stock purchases by employees also figured in this trend. The list of innovations is virtually endless. The second trend was marked by provision of better housing, of recreation facilities, of vocational education in public school curricula, of publicly sponsored legislation benefitting workers, etc. The immensely costly and widely publicized construction before World War I of a model community at Gary, Indiana, by the United States Steel Company—an elephantine Utopia with ribs of solid steel—exemplifies the aspirations of the period.

However, even this broadened approach failed to achieve the hoped-for goal. The next marked trend was towards strengthened labor unions and emphasis on collective bargaining, culminating in the passage of the Wagner Labor Act in 1935. This immensely enhanced the prestige and power of labor unions and intensified agitation for formalized union-management "co-operation", to improve working conditions, to raise labor's formal status in industry, and to augment its share of profits.

Concurrently, the concern of industrialists with problems of fatigue, monotony, safety, placement, workers' health, and improved physical surroundings, led to innumerable studies by qualified specialists in physiological psychology, illumination, psychological testing, hygiene, nutrition, etc. The failure of such studies to establish demonstrable relationships between these factors and worker-satisfaction precipitated the suspicion that more knowledge concerning the *human* factors in industry was essential to any understanding of the field of economic and industrial organization. This suspicion crystallized in the tentative formulation of a series of postulates to support a new theory of management.

This theory represented industry as a complex of three highly complicated processes, all interrelated and interdependent. There was, first, the *technological* process, dependent upon the discoveries of "pure" science.

This involved the application of such discoveries to (a) the development of new products; (b) the development of new uses for old products; (c) ever-expanding uses of power-resources. Second, there was the process of *production.* This was dependent on the one hand on mechanical inventions for the tools which convert scientific discoveries into products for sale on the market; and dependent on the other hand on economic knowledge and the multitudinous array of intricate calculations which make modern industry possible: accounting machines, cost-accounting formulae, forecasting, etc., etc. The third process was ***human relations***, comprising the totality of arrangements by which each worker is fitted into a satisfying place in such a complex organization. The theory assumed that these arrangements must be such as to develop the human personality, while enabling the worker to do his specific share of the work of production, not only to management's satisfaction, but *to his own as well.*

Scientific knowledge was lacking to enable industrialists to carry on this last process with an efficiency equal to that of the other two. Administrators had to experiment blindly, guided mainly by "common sense" and the rules of justice and fair play. One of the industrialists who early advocated a theory of management which embraced all three of these functions and gave *equal weight* to all three was Samuel A. Lewisohn, whose book, *The New Leadership in Industry*,[7] published in 1926, pioneered in this field. Mr. Lewisohn's contribution was his insistence that human relations constituted a distinct branch of the function of management; that development of the individual worker was a distinct aspect of it; that human relations were not, as had previously been assumed, a subsidiary of the production process.

Another early theoretical formulation was presented from 1924 to 1932 by Mary Follett in numerous addresses and lectures to business men. These papers—not published in book form until 1941,[8] show her to have possessed amazing prescience in this field. Her broad sociological comprehension made her uniquely aware for her time of the strategic importance of scientific treatment of human relations in industry. In *The New State* and *Creative Experience* (1918 and 1924, respectively) she had utilized conclusions of jurisprudence and legal theory, of social and individual psychology, of political science, to lay a broad foundation for the search for principles of

[7] Dutton & Co.

[8] As *Dynamic Administration*, edited by Metcalf, Henry C. and Urwick, L., Harper and Bros.

organization upon which the productive and creative institutions of mankind are based. From 1924 until her death, she devoted her thought to business administration, and much present thinking in this field has been influenced by her work.

II.

However, the concepts that management is responsible for sound human organization and that human relations in industry are susceptible to scientific treatment lacked demonstration on a large scale until F. J. Roethlisberger and Wm. Dickson,[9] the former a member of the research staff of the Harvard School of Business Administration and the latter an officer of the Western Electric Company, published a step-by-step account of a 5-year study at the Hawthorne Works of the Western Electric Company, (whose employees numbered 29,000). Its conclusions[9a] supported the reasoning of the handful of industrialists who had been influenced by Mary Follett or Samuel Lewisohn and others of similar opinions.[10]

Messrs. Roethlisberger and Dickson stated:

> "Industrial organizations may be regarded as performing two major functions, that of producing a product and that of creating and distributing satisfactions among the members of the organization. The first function is ordinarily called economic. From this point of view the functioning of the concern is assessed in such terms as cost, profit, and technical efficiency. The second function . . . is not ordinarily designated by any generally accepted word. It is variously described as maintaining employee relations, employee good will, cooperation, etc. From this standpoint the functioning of the concern is frequently assessed in such terms as labor turnover, tenure of employment, sickness and accident rate, wages, employee attitudes, etc. The industrial concern is continually confronted, therefore, with two sets of major problems: (1) problems of external balance . . . generally assumed to be economic, and (2) problems of internal equilibrium . . . chiefly concerned with the maintenance of a kind of social

[9] *Management and the Worker*, Harvard University Press, 1939.

[9a] For an exhaustive statistical analysis of the entire body of data collected during the five years of work, see Whitehead, T. N., *The Industrial Worker*, Harvard University Press, 1938, two volumes.

[10] There were a number of industrialists who held this general point of view, though not many of them wrote books about it. Scattered publications throughout the '20s bear witness to it. Chester Barnard's *The Functions of an Executive*, published in 1937, is an example of mature thinking on the subject. (Harvard University Press.)

organization in which individuals and groups through working together can satisfy their own desires. . . .

"Producing an article for profit and maintaining good employee relations are frequently regarded as antithetical propositions. . . . However, . . . these two sets of problems are interrelated and interdependent. The kind of social organization which obtains within a concern is intimately related to the effectiveness of the total organigation. Likewise, the success with which the concern maintains external balance is directly related to its internal organization. . . .

"Scientific controls have been introduced to further the economic purposes of the concern and the individuals within it. . . . Nothing comparable to this advance has gone on in the development of skills and techniques for securing cooperation, that is, for getting individuals and groups working together effectively and with satisfaction to themselves."[11]

They said further:

"There is need for explicit recognition and systematic application of a specialty which is addressing itself to the adequate diagnosis and understanding of the actual situation—both individual and group—within the factory."[12]

Prior to the Hawthorne study, the efforts to satisfy workers were based on the assumption that they were an aggregate of *individuals* motivated by self-interest.[13] Improvement plans held the individual in mind as the ultimate unit to be satisfied. The significant finding of this study is that ***the ultimate unit to be satisfied is not the individual but his social group.*** By the word group, the authors mean the utterly real, wholly concrete, social unit which emerges as a consequence of the interrelationships formed between a number of workers who respond to, and feel regard for, each other—the unit previously defined in this paper as a "personal" society, or as "his society". They found that the behavior of the men at work:[14]

"could not be understood without considering the informal organization of the group and the relation of this informal organization to the total social organization of the company. The work activities of this group, together with their satisfactions and dissatisfactions, have to be viewed as manifestations of a complex pattern of interrelations.

[11] *Management and the Worker,* 551-553.

[12] Ibid, p. 591.

[13] Racial groups were recognized, often to be broken up as work units.

[14] For a full bibliography of this work, see Mayo, Elton, *The Social Problems of an Industrial Society,* pp. 135 et foll. Mayo's first report was published in *Personnel Journal,* Dec. 1924.

In short, the work situation of the bank wiring group had to be treated as a social system".[15]

This contention of the Harvard scientists, that the informal organizations which workers form are the *determining factor* in producing worker satisfaction and cooperation, or team-work, must not be viewed in isolation. It is part of an emerging trend in contemporary American social science. Throughout the same period in which the business research staff at Harvard and a few other scientists with their approach, were developing the significance of informal groups in industry,[16] other social scientists were gathering and recording data of equal importance concerning informal groups in social institutions other than industry. When the whole literature is viewed as a unit—as it seems that it should be—it appears to mark a significant point in the development of thinking about the basic forces and structures of society. As George Lundberg said recently:

> "(There) has been a turning to the intensive study of relatively small and simple social systems rather than the traditional cosmic researches to which sociologists in the past have been addicted. That is, we are leaving the 'natural history' stage of our science and turning to 'atomic' research. . . . I base the prediction (of an intensive development of 'atomic' sociological research) on evidences in current research. . . . The quest is for principles of social behavior in simple systems which may lend themselves to generalized application to vast and complex situations.[17]

Social anthropologists, psychiatrists, psychologists, military specialists, even psychoanalysts, have contributed to this trend as well as sociologists.[18] However, the most highly systematized and concentrated research and experiment in this 'atomic' field, has been done by Moreno and his associates,

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[15]*Management and the Worker,* p. 551. In a footnote, the authors define what they mean by "social system".

[16]For a short summary of this work, see Chapple, Eliot D., *The Natural Group in Industry,* Journal of Educational Sociology, May, 1945.

[17]The Proximate Future of American Sociology, *American Journal of Sociology,* May 1945, pp. 504-505.

[18]Among the social anthropologists may be mentioned: Ralph Linton, Chas. P. Loomis, Alexander Leighton, Robt. Redfield, Clyde Kluckhohn, Lloyd Warner, Drake and Cayton; among psychiatrists, and psychologists: Kurt Lewin, Ronald Lippitt, Regina Westcott, Erich Fromm, Karen Horney; among sociologists: Kimball Young, George Lundberg, Allison Davis, William Whyte, and the Gardners. For a summary of this trend, see Treudley, Mary B. Community Structure and Organization, *Journal of Educational Sociology,* May, 1946, pp. 576 et foll.

who have given pronounced impetus to the study of interpersonal relations through their related movements, "sociometry" and "psychodrama."

Sociometry is at once a research method and an experimental technique. It is exclusively concerned with the discovery, analysis, and mathematical study of all the *two-way*, spontaneous aspects of interpersonal and intergroup relationships. It is one of the more important research methods invented during the past twenty-five years, and "recognizes that social analysis of interpersonal relations and group processes should precede measurement if significant results are to be obtained. The problem then is to define and chart the relations of persons to each other in a way that (is) mensurable".[19]

Of its efficiency for this purpose, Florian Znaniecki says:

> "Sociometry seems to have solved (this) age-old methodical difficulty in a more satisfactory way than any other attempts to introduce quantitative methods into social science, for . . . it does not sacrifice the socius to the metrum, empirical content to formal technique".[20]

Of equal importance with their methods, is the dynamic approach which sociometrists bring to their special field of science. As understanding of this approach is essential to understanding of the significance of their findings regarding interpersonal relationships, it is necessary, however summarily, to enumerate their main principles.[20a]

1. Sociometry studies the human being as *socius*, as a totality whose "social" and "individual" functioning are reciprocally interdependent and can not, therefore, be segregated. Theoretically, such a formulation is not particularly novel, for sociologists, social psychologists and philosophers have long recognized the difficulties of separating these functions for concentrated study. Nevertheless, they have persistently made efforts to do so, in the hope that such concentration would be productive. However, the attempts have in the main proved abortive. It remained for sociometrists to make the bold assertion that only study of the human being *in the area where the individual and the socius merge* would yield significant results in the study of human society.

2. Like the biologists, sociometrists insist upon the reciprocal inter-

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[19]Burgess, Ernest W., Sociological Research Methods, *Amer. Journal of Sociology*, May, 1945.

[20]Sociology and Sociometry, SOCIOMETRY, Vol. VI, No. 3, pp. 225 et foll.

[20a]For a full discussion of the sociometric approach to the study of human society, and its methodological principles, see: Moreno, J. L., *Who Shall Survive?* Beacon House, Beacon, 1934; *Sociometry in Relation to Other Social Sciences*, SOCIOMETRY, Vol. 1, No. 1; *Sociometry and the Cultural Order*, SOCIOMETRY, Vol. VI, No. 3.

dependence of structure and function. These are regarded as two aspects of the same thing. Social functioning is not considered the cause of social structures, nor *vice versa.*

3. Sociometrists do not treat human beings symbolically. They hold that the structures and organization of each part of human society are specific and can be determined only by considering concretely each individual, and every relationship which one individual may bear to another individual. As a corollary, they insist that conclusions drawn from study of one society can not be held to apply automatically to another society.

4. To sociometrists human interrelationships are a component of a space-time-relationship totality. Hence, they hold that automatic conclusions can not be drawn about the same human group from one time to another. Thus, in order to apply therapeutic measures, it is essential to know the actual structure of the group at the given moment and in all future developments as well.

5. The concept of reality adopted by sociometrists is relativistic: *Reality is potentiality.* It is not simple actuality seen from without and deprived of its implications, but an infinite actualization of possibility. They think of the human being as a system of energy in continuous action, or continuous movement, which is infinite; movement that, on terminating in itself can not help but beginning anew, because the human being is endowed with spontaneity. For sociometrists, equilibrium can only be a conceptually-determined point abstracted from the continuous movement; it is not a part of the movement itself, which knows no equilibrium in the sense of a pause or stopping place. The movement, because it is integral and on-going from birth to death, implies that the component forces in the individual human system of energy are acting and reacting in an orderly manner. The forces can only be considered in "equilibrium" if equilibrium is defined in the sense of "being organized". Sociometrists do not conceive of any therapeutic process by which social processes could be brought into a state of equilibrium which would imply a static or immutable end of the movement. Human spontaneity, unpredictable in its essence, would prevent stasis.

Acceptance of these postulates means that sociometrists have undertaken to study an interdependent dynamic complex, composed of several interrelated factors which are variables, viz.: the spontaneous or creative faculties of human beings, actualization of these in social functioning, and their embodiment in social structures.

The complexity of the interrelations of these factors required the in-

vention of new methods for experimental research. Consequently, sociometrists have invented scales, tests, and other instruments, together with new adaptations of mathematics to sociological sampling, to indices, co-efficients, and to factor analysis.[21]

The sociometric test is their chief operational guide. They use observation and skilled interviewing only to supplement the data gathered by sociometric tests. The sociometric test was designed to conform to the requirements of their dynamic approach to research in human interaction. If individuals are to be studied concretely and not symbolically, each individual must participate spontaneously to the best of his ability in uncovering his relationships to other individuals. As each individual's position in a community is unique, his behavior can be understood only if the structure within which he functions is known fully and intimately with a detail impossible of attainment by means of observation and/or interviewing, however skilled. Further, as the structure of a communiy is not static, but a variable, the research method must be one which can be used not only once but an indefinite number of times in the ongoing future. Therefore, it must be such as will motivate individuals to participate spontaneously repeatedly and regularly. This requires fitting the procedure to the administrative arrangements prevailing in the community under study. Only if each individual's spontaneous strivings in regard to association with other persons, or in regard to objects and values, are aided officially and as a matter of policy by the administrative hierarchy, can the research method be repeated at any time, and a continuous flow of knowledge regarding the development of the community over any period of time be made continuously available.

To accomplish these ends, the role of the researcher has to be broadened from that of participant observer, or interviewer, to that of an active agent who identifies himself so far as possible with the aims of each individual and tries to aid him in their realization.

The introduction of a sociometric procedure, even to a very small community, is an extremely delicate psychological operation. Therefore, the individuals who are to be studied must be carefully prepared for the test. A great many fears and resistances have to be overcome. The average person is afraid or ashamed to answer questions about his psychological reactions and he is inclined to be suspicious of the value of researches which

[21]See Bronfenbrenner, U., *A Constant Frame of Reference for Sociometric Research*, SOCIOMETRY, Nov. 1943 and Feb. 1944. Also, Criswell, Joan, *Sociometric Methods of Measuring Group Preferences*, SOCIOMETRY, Nov. 1943.

require his whole-hearted participation. Thirty years ago he was equally hostile to physical examinations and regarded them as an invasion of his privacy. Just as tuberculosis prevention required a campaign of public education to persuade people to accept physical examinations, so a similar campaign will be needed to make them understand the necessity for sociometric procedures to remedy situations of which they complain. People will have to learn that they themselves must cooperate fully as individuals in remedial experimentation.[22] The sociometrist has two reasons for exerting his skill to gain full collaboration of any group he faces: the more spontaneous the collaboration, the more valuable will be the fruits of his research; and the more helpful will be the results for the members of the group.

The sociometric test must be constructed in such a manner that it is itself a motive, an incentive, a purpose, primarily for the *subjects* instead of the researcher. If the test procedure is identical with a life-goal of the subjects, they can never feel themselves to have been victimized or abused. From the point of view of the subjects, the sociometric test is not a test at all, but an opportunity to act for their own ends. Through it, they are taken into partnership, can communicate to the researcher their spontaneous attitudes, thoughts, and motivations in respect to the individuals within their community.

A test can be called sociometric only when it attempts to determine the *feelings* of individuals towards each other *in respect to the same criterion.* The feelings of individuals towards each other without relation to a criterion does not yield exact knowledge of social structure and functioning. What is needed is to give people the opportunity to choose the individuals whom they prefer as collaborators in action for a specific purpose, or goal, to be attained.

The criterion for a sociometric test must be selected carefully. The true organization of a group can be disclosed only if the test is constructed in accord with the criterion around which it is built. For instance, if determination of the structure of a work group is desired, the criterion *would be some action connected with the work itself, not some action connected with factory recreation or rest-periods or lunch hours.* Complex groups are built around several essential criteria and the individuals comprising a grouping often may not be fully aware of what these criteria are and would not be able to articulate them. Hence, before he constructs his test the research worker must determine what these criteria are.

[22] Cf. Porter, Russell, Workers' Health as a Factor in Industry, *New York Sunday Times*, Nov. 17, 1946.

In applying sociometric procedures to industry, a special factor has to be considered in the criterion. This is the relation of a group of workers to the technological process they carry on. Workers are grouped around certain processes which they possess the skills to operate. This grouping at present is completely mechanical, or nearly so, determined by chance, by arbitrary decisions of management, by "intuitional" judgment, or by standard testing devices for aptitude and/or intelligence. Within such groupings, however, because the operatives are human, they spontaneously feel attracted towards, or repelled by, every other worker with whom they are expected by management to cooperate.[23] The problem of applying sociometric procedures to industry, then, involves the invention of tests which will reveal the spontaneous attractions, repulsions, and indifferences between workers who possess the skills required to construct teams for the technical or mechanical processes which must be carried on cooperatively. In some cases, the work is so simple that this technological factor would not be very important; in others, it might be crucial. The sociometric procedure seems to be the only method so far evolved which provides this essential information in the detail and with the certitude required.

All of the studies of work situations made by sociometrists[24] have revealed that *liking, or attraction, between members of a group result in heightened cooperation; that repulsions between workers cause friction on the job, lowered morale, and limited productivity* (see sociograms of a steam laundry). In this context, the supervisor or immediate administrator must be considered a member of the group, for "leadership is a function of interpersonal relations, dependent upon the give-and-take between the members of a group. It is relative to the group process".[25] Their findings regarding work situations, are supported by the studies sociometrists have made, of other types of social institutions. These have provided overwhelming evidence[26] that a group of individuals will cooperate whole-heartedly and ef-

[23]Indifference is also felt towards others, but there is no space here to discuss this phenomenon and its implications. They are dealt with in the references given in Note 20a.

[24]Moreno, J. L., *Who Shall Survive?*, Nervous and Mental Disease Publishing Co., Washington, 1934, pp. 108-113, 130-134, p. 309, pp. 318-319, p. 321.

Also, cf. Wolman, Shepard, SOCIOMETRY, Vol. 1, No. 1, pp. 220 et foll; Sanders, Irwin, SOCIOMETRY, Vol. II, No. 4; Loomis, Chas., SOCIOMETRY, Vol. IV, No. 1; Cologne, Rose, SOCIOMETRY, Vol. VI, No. 1; Jacobs, John H., SOCIOMETRY, Vol. VIII, No. 2; Jennings, Helen, *Leadership and Isolation*, Longmans Green, 1943, pp. 226 et foll.

[25]*Leadership and Isolation*, p. xiii, Introduction, by Murphy, Gardner.

[26]The literature is so voluminous, citations can not be made here. The reader is

STEAM LAUNDRY*
STRUCTURE OF WORK GROUP BEFORE RECONSTRUCTION

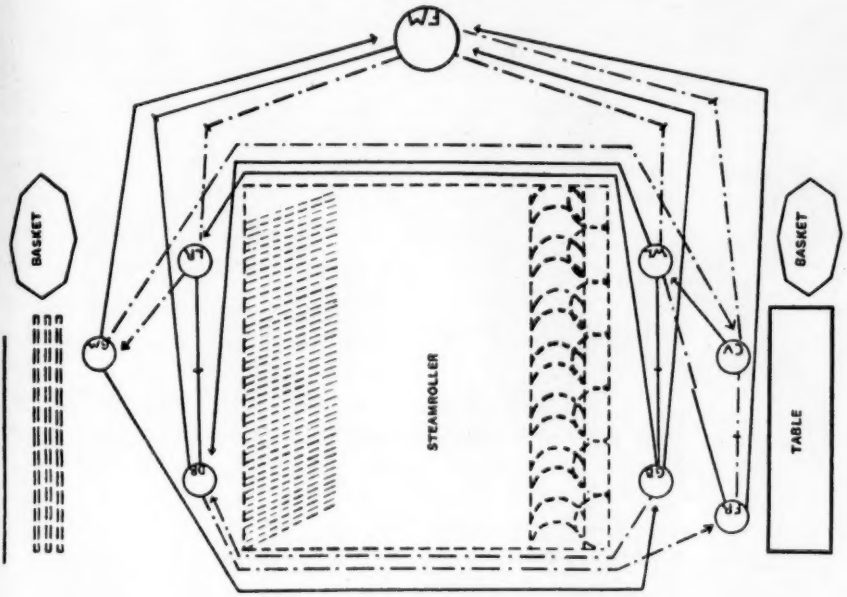

FIG. 1.

Seven negro workers and one white forewoman. DR and LR, the feeders, reject each other. GR and WL, the catchers, reject each other. WL rejects the feeder opposite her, LR. FR and CV, the two folders, attract each other. FR and CV reject WL. GM, the shaker, is attracted to CV and rejects GR. GM, DR, GR and FR reject the forewoman but only DR is rejected by her. LR, WL and CV are attracted to the forewoman. Production was obstructed.

fectively for any purpose only when the majority of the members feel attraction for each other.

These findings indicate that management requires some device for discovering the inter-personal relations between workers, for these apparently are definitive in success or failure to achieve the goals of high morale, low labor turnover, and smooth maximum production.

The data regarding interpersonal relations—the currents of liking and

referred to *Who Shall Survive, Leadership and Isolation,* (already cited), and to the various volumes of SOCIOMETRY, and to Sociometry Monographs, published by Beacon House, 101 Park Ave., New York 10.

*From *Who Shall Survive?,* "Organization of Work Groups," pp. 318. The results of a sociometric test are here charted, expressing the feeling relation among the workers and towards their forewoman.

STEAM LAUNDRY
STRUCTURE OF THE SAME WORK GROUP AFTER RECONSTRUCTION

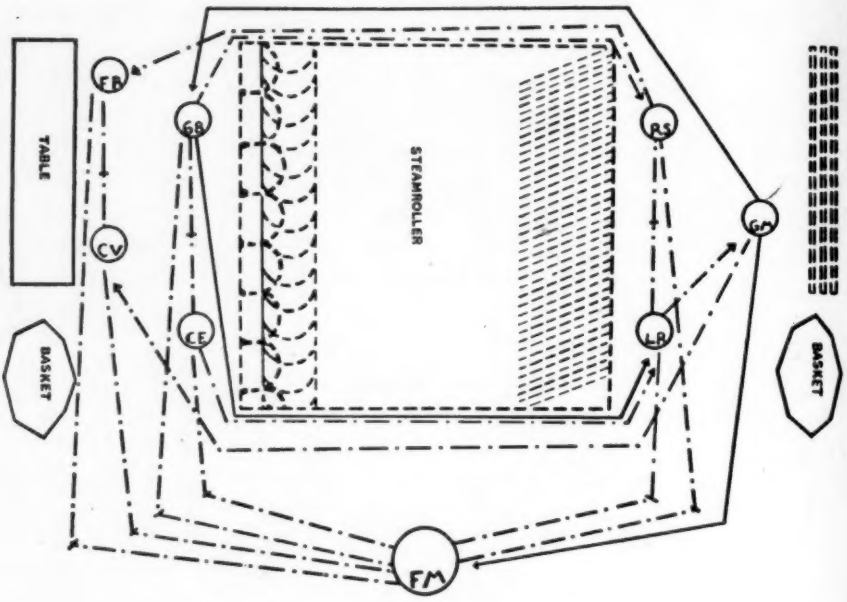

FIG. 2.

After assignment of DR and WL to another work group and their replacement by RS and CE the new psychological structure of the group is here plotted. (Compare with Steam Laundry, Fig. 1.) The two feeders, RS (new member) and GR, attract each other. The two folders, FR and CV, attract each other. The two catchers are attracted to the two feeders opposite them. All the workers except GM are attracted to the forewoman. Production improved.

dislike projected by each individual towards every other individual in a face-to-face grouping—can be charted on what the sociometrists call a *sociogram*. This consists of a diagram in which the mutual relationships between individuals are indicated by connecting lines, usually red for attractions and black for rejections, or dislike. When the sociogram is complete, it can be seen at a glance whether the grouping in question is characterized predominately by attractions or repulsions. Any sociogram in which the repulsions outnumber the attractions constitutes a unit in which friction, antipathy to directives, and low productivity, can be predicted. On the other hand, if the grouping is characterized by a high percentage of attractions, then high morale, a smooth flow of production and energetic cooperation may be confidently expected, provided the attitude of the group towards manage-

ment is also favorable. This attitude depends upon the position of the group in the psychological network[27] of the plant.

The factor of spontaneity, which has been mentioned several times in the above paragraphs, requires some explanation, however brief, even in such a sketchy summary of sociometric theory as this. Sociometrists regard spontaneity and creativity as *primary*, independent phenomena, not as derivatives of libido or of instinctual animal drives. The response of the individual to a new situation, and his new responses to an old situation are made possible by this primary sense of spontaneity. It enables the individual to meet new situations adequately. The individual experiences spontaneity as his *own* state, autonomous and free—free from any external or internal influence which he can not control. This factor is more than, and different from, the given energy of the human being. In the new born child it is the factor which enables it to reach beyond itself, to arouse all its organs to modify their structures to meet their new responsibilities. This is the area in which the choices and decisions of human beings are made. Although a majority of physical and mental characteristics are gene-determined and moulded by "conditioning", the combinations between them which emerge—the combinations which create the new individuality in every generation—are explicable, according to sociometric theory, only if the operation of the spontaneity factor is assumed. Deviations from the combined effects of hereditary and social forces can be attributed only to the operation of some such factor. The differences between identical twins brought up in the same environment, for instance, seem to be better explained by hypothecating this factor than by any other hypothesis so far advanced. Psychological concepts, such as adaptation, flexibility, adjustment, readjustment, and originality or "genius", become less unclear and unprecise if related to the hypothesis of a spontaneity factor in human equipment.[27a]

The flow of feeling between human beings, characterized by attraction

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[27]The informal structure within a community through which public opinion is formed and disseminated. It consists largely of a chain formation and can be mapped when the connecting links between informal groups are discovered by sociometric procedures applied to the whole community. See *Who Shall Survive?* pp. 251-265.

[27a]For a full discussion of the spontaneity factor, see Moreno, J. L., and Florence B., *Spontaneity Theory of Child Development*, Sociometry, Vol. VII, No. 2. Also, Moreno, J. L., *Who Shall Survive?*; also, *The Philosophy of the Moment*, Sociometry, Vol. IV, No. 2; also Moreno, J. L. and Jennings, Helen, *Spontaneity Training*, Psychodrama Monographs, Beacon House, N. Y. A bibliography is attached to the article in Sociometry, Vol. VII, No. 2.

or repulsion, sociometrists regard as due to this factor. From the contact between the spontaneity possessed by two different persons, there results an interpersonal situation. In other words, human relationships are rooted in these contacts. Therefore, any executive whose work requires supervision of human beings must understand the significance of this basic factor. It is as essential to the understanding of human relations as vision to the understanding of plastic art. A person must be able to *see* a work of art before he can respond to it. So a factory executive must grasp the basic nature of spontaneity before he can begin to respond adequately to the human behavior problems with which he is confronted. The most successful executives have an intuitive understanding of this factor, but if there is to be "explicit recognition and systematic application of a specialty which is addressing itself to the adequate diagnosis and understanding of the actual human situation . . . within the factory", as recommended by Dr. Roethlisberger, these deeper insights into human nature must become a part of that specialty.

IV

To sum up: these groups of social scientists have presented industrialists with invaluable insights into the working of our economic institutions. Each group has made specific contributions to the technical equipment required for the emerging art of skilled management which our democratic society demands of modern industrialists.

These contributions—which form a related whole—are summarized in outline form below.

The Harvard scientists have:

1. Established the indispensibility of a discipline addressing itself to "diagnosis and understanding of the actual situation—both individual and group—within the factory".
2. Given scientific content to the concept of "human relations in industry".
3. Discovered the central significance of the informal group—the personal society—in the social structure of the factory.
4. Documented the dominant role played by the informal group in (a) output rates, absenteeism, labor turnover, etc.; (b) in making factory work a meaningful and satisfying way of life.
5. Demolished the 19th century concept of "the economic man" by demonstrating scientifically the subordination of economic incentives to social factors in securing cooperation and teamwork in the factory.

The sociometrists have:

1. Discovered the dynamic forces which produce informal groups—the emotional responses which human beings spontaneously make to other human beings when meeting face-to-face.

2. Systematized investigation of these forces, invented methods for studying, measuring, graphing, and charting them.

3. Analyzed the concept of cooperation or team work, showing that its most important element is the interpersonal relationships based on attractions between the members of a group, and conversely, that repulsions between members constitute interferences with cooperation.

4. Discovered in inter-group relationships the psychological networks within which public opinion in any community is formed and disseminated.

5. Demonstrated that the core of social structure is the pattern of all the interpersonal relationships between the individual members of a society, and that the functioning of economic organizations can not be fully understood without intimate knowledge of the patterns of interpersonal relationships which constitute the core of their social structure.

6. Offered a theory of human society which makes the pattern of interpersonal relationships through which human beings function the determining influence in economics, politics, government and all other institutions. A corollary of this theory is that no one institution of society exercises a determining influence over any other. It thus contravenes the 19th century, Marxian theory of "economic determinism."

Both groups of scientists agree that our society needs to be made aware of the vital significance of interpersonal relationships and they look to this awareness to cure the basic ills which beset us, ranging from local community disintegration to the threat of atomic war. One of the chief causes of these ills, the Harvard group is convinced, is the deplorable anonymity to which modern man has been reduced by social policies, historically determined, based on ignorance of the intimate, informal groups which so largely determine the development of personality and which yield the major social satisfactions which make life worth living. They want to see administrative arrangements inaugurated in all our institutions—industry, education, community organization, social work—which will develop and support the activities of informal groups, and are confident that such recognition will integrate these units in a vast collaborative effort for constructive social ends. The sociometrists state a similar conclusion in somewhat different terms: Man has been overwhelmed by the machine. In his spontaneity lies his only hope of building a society in which the machine

will be subjugated. His spontaneity must be released by enabling him to form groups of his own choosing. This will do more than produce efficient groups; it will liberate the deeper forces of creativeness within every individual. The economic and political planning of society will be sound only if deep roots exist in the form of genuine compatibility between the persons who are to share cooperative activities.

For industry, as at present organized, the Harvard group recommends therapeutic treatment—interviewing and observational techniques to relieve tensions and to augment the dignity and status of individuals and groups alike. The sociometrists recommend, for every type of institution, including industry, sociometric procedures which are at once therapeutic and dynamic: the application of sociometric tests to release the suppressed spontaneity of individuals and groups; and to make possible the assignment of individuals to the right groups. Their psychodramatic procedures, closely related to sociometry, also offer industrial, as well as other institutions, a range of techniques suitable for therapy, for training programs, and personality development. These have already been found useful in a variety of situations in industry.[28]

The discovery that the interpersonal relationships obtaining between members of a work unit are the *determining* factor in worker satisfaction and productive morale appears to be of such definitive importance that it will have far-reaching consequences. Although they can not be elaborated here, they should be briefly noted by way of conclusion:

A. The discovery unveils the locus within which are crystallized worker evaluations of, and attitudes towards, management. Thus management is furnished with a decisive answer to its long quest for the source of worker satisfaction and dissatisfaction. It can now vizualize a concrete, realistic unit upon which to base its practices to facilitate worker satisfactions, and a unit within which its own performance can be tested.

B. Labor unions have been presented with factual information which must vitally affect their theory of class struggle and weaken their confidence in the axiom that labor and management are inherently opposed functions. This should lead to changes in their attitudes and practices and to reduction of labor strife.

C. Changes in labor theory and theories of labor-management co-

[28]For Psychodrama. see: Moreno, J. L., Psychodrama, Vol. 1, Beacon House, N. Y., 1945.

Also, SOCIOMETRY, Vol. VIII, No. 3-4, "Group Psychotherapy", a Symposium.

operation must have sharp repercussions upon American political philosophy and behavior.[29]

D. This discovery answers with an emphatic NO! the query as to whether modern industry is *inherently* inimical to the welfare of human beings. It shows that lack of recognition of the structures within which workers' attitudes are formed, and of the fact that it is in his intimate groups that man attains dignity and individuality, have stood in the way of devising the adjustments needed to make modern industry responsive to the heavy demands upon it for human satisfactions.

The experimental techniques and therapeutic measures based on this discovery are the first genuine aid social science has offered for the solution of the human problems of industry. They open a way to a vision of the future in which workers in industry will be neighbors, and, says Alfred North Whitehead, "Men require of their neighbors something akin to being understood, something sufficiently different to provoke attention, something great enough to command admiration."

[29]For an elaboration of this point, see De Gre, Gerard, Freedom and Social Structure, *American Sociological Review*, Oct. 1946.

SOCIAL PROCESSES MOTIVATING EMPLOYEE BEHAVIOR IN THE FACTORY WORKSHOP

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The basic sociometric techniques for the measurement of inter-personal relations have been developed by J. L. Moreno and his associates. Their initial researches in this field have provided a firm foundation for the study of the individual worker as a participant in the industrial work group. Moreno pointed out three aspects of industrial research, (1) (a) the relations of the workers to each other, and the foreman, (b) the relation of the workers to the particular technological process and (c) the economic aspect—. The particular dynamic interplay of relationships he cited as follows. "The same structure occurring in the organization of a home group, and which may express little or no disturbance in its functions of this group, can express a very severe disturbance in the functioning of a work group, even if the same individuals are concerned in both instances." His analysis of a laundry set up and a diningroom were complemented by Wolman's (5) analysis of a community co-operative of needleworkers, and by Rose Cologne's "Experimentation in a Community Center" (7). She concluded with the words: "One of the chief lessons taught by the use of sociometric procedures in this project was the importance of discovering the personalities from which the tensions in the work situations were issuing, the use of this technique in commercial and industrial projects and homes, prove equally as valuable as its use in community projects."

The "Role-playing" techniques as sponsored by Bradford, Lippitt and French provide additional instruments. They are closely associated with and are adapted from psychodrama and sociodrama techniques (3). It appears that the application of sociodrama techniques to the area of inter-personal relations in industry serves as an energizing force in stimulating purposeful group inter-relations. The sentiments, prejudices and feelings of workers are viewed as primary determinants in grouping personnel into effective work units, and the measurement of those sentiments serve as index for establishing maximum employee participation and optimum efficiency (6).

Burleigh Gardner has stressed the application of more humane concepts of industrial psychology in which human relations are sponsored and the individual employee is viewed as an integral part of a cooperative work

force (15). It appears that the factors governing group interaction in the industrial work situation must be reduced to their simplest form and recognized by management if tangible progress is to be attained in the field of interpersonal relations. However, the "role-playing" techniques of the psychodrama offer a practical, functional method of inculcating participants with the common goals, objectives and purposes of the industrial behavior pattern.

The mainspring of group interaction do not stem entirely from the "line of command" authority and the formal organizational pattern sponsored by management. The primary motivations for employee behavior in work groups are a result of a multiplicity of authoritative forces that interplay within the work situation. The interplay of different controls within the work group forms a "complex pattern of interrelationships which form social systems" (8). There are distinct forces controlling the social behavior of the individual worker in his interaction with other members of the factory work group:

1. The controls exercised by the formal organization structure
2. The controls exercised by the socially autonomous work groups or crafts
3. The controls stemming from organized bargaining units
4. The carry-over of status symbols gained in socio-civic paricipation and transference of these symbols into the industrial behavior pattern, i.e. political, religious, ethnic forces, etc.

The interplay of the above virtually autonomous forces develops the resultant social behavior of the industrial work group. The worker's conformance within the work group is influenced by the impact of these multiple forces, and participation in the formalized management structure is intermingled with his allegiance to informal group factions as well as adherence to the mores, customs and "folk" interpretations built up around various crafts and occupations. The formal organization chart breakdown does not necessarily reflect an absolute directive authority governing the social and productive activities of established work groups, but does represent one of the important forces directing the productive effort of the industrial work unit. The effectiveness of the formal, authoritative pattern of management becomes somewhat diluted when placed in close interaction with equally assertive union organizations and craft groups welded together by their own peculiar customs, beliefs and sentiments. Thus, the social behavior of any one individual or group of individuals stems from the inter-

play of different authorities within the industrial work pattern, and may well be the result of a fusion of divergent philosophies—namely management, labor, and the informal work group.

The Social Factors of Job Performance

The job is one of the most important factors determining a worker's relative status or social prestige within the work situation (9). The intensive, objective accumulation of job facts with negligible emphasis upon the worker as a participant in a dynamic social situation, tends to minimize the importance of social characteristics inherent to successful work performance (1). It appears that the social factors surrounding the job have been under-emphasized primarily because they are less susceptible to measurement, however recent trends indicate considerable progress in the measurement of social skills (2). An over-emphasis of rigid job evaluation techniques appears to de-humanize the job and stress stereotyped work functions and technical proficiency to the detriment of a humanized work psychology. In some instances, the job has been regarded as a homogeneous grouping of repetitive, de-skilled functions with little consideration for the social interrelations requisite to job performance. The social factors are viewed as being increasingly important in relieving the tensions, prejudices, and frustrations arising among personnel assigned to mechanized work functions (10). It appears that the worker is essentially a social being and identifies himself just as readily to informal social work groups as to social behavior patterns outside the work situation. In order to reflect the job in the proper context, each work function should be synthesized organizationally (11) and socially within the organization structure to insure the maximum use of individual capacities of workers participating in the industrial behavior pattern. Specific occupations cannot be viewed in isolation, but in proper perspective to the wholeness of the organization structure (12). Likewise, the social behavior and customs sponsored by diverse occupational groups must be recognized and synthesized with the objective methods of measuring work performance, inasmuch as these factors govern the internal equilibrium of the industrial work group. Therefore, it appears that the inordinate stress placed upon mechanical aptitudes and technical skill must be tempered with adequate emphasis upon the social relationships between the members of social groups and the group sentiments, mental sets, and configurations arising from those relations. The necessity for an adequate balance between technical and social skills is cited by Elton Mayo in *The Social Problems of an Industrial Civilization*:

> "Technical skill manifests itself as a capacity to manipulate things in the service of human purposes. Social skill shows itself as a capacity to receive communications from others and to respond to the attitudes and ideas of others in such fashion as to promote congenial participation in a common task. The established society by its apprenticeship system developed technical and social skills simultaneously in the individual, psychoneurosis the consequence of insufficient social discipline and practice, seems to have been less prevalent in successful, established societies" (13).

The active organization of employees does not cease with their formal participation within the confines of "line-of-command" authority and union jurisdictions, but manifests itself also in the powerful unorganized activities centered around occupational crafts and work units (14). Each occupational entity has its own behavior pattern, code of ethics, underlying sentiments and objectives and its particular niche in the stratified social scale (14). These work groups are integral parts of the entire social organization and become very potent forces if their productive efforts are not fully recognized in the scheme of competitive enterprise (14). The work unit constitutes an integral part of a complex system in which each employee performs definite responsibilities in close coordination with other group members (15). The job functions, economic level and social status of all participating employees are interrelated, and all contribute to the ultimate objectives of the productive work group.

The Significance of Informal Group Organizations

It should not be assumed that management directives wholly provide the motivation for an employee's conformance to the industrial behavior pattern. The factory mind is conditioned to an appreciable extent, by the prevailing mental set of the work group, and more particularly by those articulate leaders who transform subjective group sentiments into some semblance of rational group thinking. In accordance with their faith in unity of action, masses of employees are prone to transfer their own individual demands to the informal work leader, who skillfully moulds group sentiments into concerted action. The actions emanating from group sentiments and directed against management, may or may not be purposeful, the main objective being to maintain continuous action, whether it be negative or positive, to provide an outlet for strong group sentiments and frustrations. The coalescense of group thinking into some form of action by the social work leader or by the union representative indicates the initial importance

of group thinking at lower organization levels, and demonstrates the power of social force culminating in united group action. The thoughts and actions of the worker are extremely significant inasmuch as they reflect his true sentiments and prejudices stimulated by interaction with members of his own social and mechanical caste. In his reaction to the work situation and in his adherence to the customs, mores and "folk" interpretations of various crafts and occupations, the employee develops a basic reaction pattern to the forces within the industrial culture. The individual employee cannot be judged as an automaton within the formal, scalar structure, but as a social being interacting with other workers in a life-like situation. Thus, the area of human relationships surrounding the work situation provide the best key to understanding the "factory mind". Management can resolve some problems of labor by diagnosing the behaviorisms and motivations behind the actions of the social leaders of informal industrial work groups. It is almost axiomatic that to lessen the social distance between management and the "factory mind" it is imperative that a rapport be established with those articulate leaders responsible for formulating, initiating and directing employee actions. It is fallacious to view the employee work group as an unorganized entity. The work unit in itself constitutes an integral part of a complex social system in which each employee performs definite duties and services and receives certain compensations (15). The job functions, organizational level and social status of all participating employees are intermingled, and all contribute to the ultimate objectives of competitive industry (15). All workers concerned with productive effort are welded together into a cohesive, organized behavior pattern by the technical and mechanical processes they perform, the rigid status systems they adhere to, and their own interrelations which determine their place in the "social organization" (14).

The Impact of Occupational Psychology

It has been stated that the social factors surrounding the job provide a new insight into the study of employee morale and the level of productive effort (8). Therefore, the social factors inherent to all jobs should be isolated and defined to reflect their importance within the basic elements of the organization from the standpoint of occupational psychology include in orderly progression: (1) the job, (2) the job family, (3) the overall functions, and (4) their proper grouping within the major segments of productive activity and each successive element represents levels of authority, progressively higher status symbols, and social responsibilities along the line of command from the base to the apex of the organization pyramid. The

individual job is the smallest component part of the occupational structure, and therefore should be defined in terms of its social relationship to similar or related jobs within appropriate job families. In this elementary unit of organization, upper and lower limits of social group interaction should be clearly established to insure a solid foundation for the isolation and successful measurement of jobs demanding higher social skills at top organization levels.

Conclusion

The social adjustment of employees to the work situation is determined largely by a diversity of different authorities within the formal and informal organization structure. Dynamic, technological changes have minimized the development and recognition of social skills and the exercise of social skills has been deëmphasized in an economy based upon proficiency in productive and technological advancement. It appears that the social factors of work performance offer a new medium of viewing the job as the crux of the individual's social and economic life and assigning proper emphasis to the behavior patterns, status symbols and "folk" interpretations inherent to jobs at their respective levels.

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DEVELOPMENTS* OF SOCIOMETRY, THE WAR YEARS 1941-1945

ALEX INKELES
Cornell University

The leadership provided in the thirties by the theoretical formulations and practical work of Moreno, has in the last five years stimulated a fairly extensive number of sociometric studies of group life, a large sample of them being reported in the journal SOCIOMETRY. Since these workers, whom we shall call sociometricians, took the group as their starting point, it is particularly interesting to observe the progress they have made and the lessons learned while in other quarters the re-discovery of the group was taking place.

In the first flush of its popularity, sociometry precipitated something of a flood of research, apparently motivated by the desire to plot and chart sociometrically the *pattern* of relationships within as many diverse types of community as possible. It was felt that such charting held the key to many heretofore unopened doors. This drive persisted into the early part of the present decade. In 1941, in a brief review of the basic concepts of sociometry, Helen Jennings distinguished between social *process,* the "temporal development of inter-personal relationships," and social *structure,* which deals with "the spatial facts of such relationships."[1] Her emphasis was rather frankly on the prime necessity for an understanding of structure, since society was to be transformed to fit man rather than the reverse. She concluded that "a knowledge of all kinds of structure together with the sociological import of each must be sought out in an attempt to arrive at the fullest possible knowledge of the meaning of the interrelation patterns within society."[2]

It was an easy and natural jump from study of the total pattern of interrelationships to the more intensive examination of the particular constellations which made up the total structure.[3] The sociometricians had charted the community, and they found certain uniformities; some people

*This is a section from a monograph study by the author "Important Developments for Social Psychology, The War Years 1941-1945."

[1]Jennings, Helen H., "Sociometry and Social Theory," *Amer. Soc. Rev.*, 1941, 6:512-522.

[2]*Ibid.*

[3]See Jennings, Helen H. "Individual Differences in the Social Atom," SOCIOMETRY, 1941, 4:269-277.

were centers of attraction and others were isolated. The immediate problem become one of discovering what these people who were alike, in being well-chosen or unchosen, had in common. There began, therefore, an intensive investigation of the personal characteristics of individuals on the basis of their choice status in the community. But such factors as age, intelligence, and length of residence in the community did not serve to satisfactorily distinguish the chosen and the not-chosen, nor did many behavior characteristics such as "moodiness" or "generous behavior," or habits such as neatness or cleanliness.[4] Self-rating personality scales,[5] and the correlation of choice patterns with such factors as family size, birth order, and socio-economic status also failed to yield meaningful results.[6] Undaunted by the failure of these more easily measured indices to yield significant correlations, the research moved over to a study of the "quality of the interpersonal relations" which made for highest acceptability. It was found that "the most important factor in social success is the kind of total personality which has attained the necessary social skills for winning satisfactory responses from others."[7] The traits which win such responses, and the situations and experience necessary to produce them will apparently, be the subject of a large part of the research of this group in the future. At the same time, the recognition that both isolation and leadership are not simply the result of certain personality attributes, but are the result of the interaction process which reflects the degree to which an individual meets particular (and changing) needs of his group,[8] will lead to more detailed study of the types of behavior different groups elicit from their members under varying conditions.

It will be noticed that although the sociometricians seem to be moving fruitfully from a preoccupation with the extensiveness of social contact to the study of the personality characteristics of people who occupy the various choice positions, they have largely overlooked the meaning of any position to the personality who holds it. One can perhaps detect here the reflection

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[4]Jennings, H. H., *Leadership and Isolation*, chapters 7 and 8, pp. 129-163.

[5]Bonney, Merl E., "The Constancy of Sociometric Scores and Their Relationship to Teacher Judgments of Social Success and to Personality Self-Ratings," SOCIOMETRY, 1943, 6:409-424.

[6]*Ibid.* For an intensive study of the correlation of personality variation and economic circumstances see, Davidson, Helen H., *Personality and Economic Background*, New York, Kings Crown Press, 1943.

[7]*Ibid.*

[8]Jennings, H. H., *Leadership and Isolation*, pp. 211-218.

of a cultural factor in the belief that extensive social contacts are, on the face of the matter, desirable. It has been suggested, for example, that isolates may constitute a potential threat to democracy.[9]

As the more intensive study of the personality of people characterized by particular choice-status progresses, however, we may expect increasing knowledge of the meaning for the individual of the position he occupies. A step in this direction has been taken by Northway, who studied the personality of "outsiders," that is, children in the lowest quartile in the choice scale. Although there was a great range of behavior and other characteristics amongst these children, she found that they broke down naturally into three groups: recessive children, who seemed below par, and lacking in drive; socially uninterested children, who did not lack interests, but found them in such things as art, music, etc.; and socially ineffective children, keenly interested in social affairs, but not accepted and attempting to compensate for insecurity by noisy, rebellious behavior. In all cases the central element was the fact that social learning had been inadequate to meet social situations, but Northway cautions that in "any one case, it is necessary to know the particular factors in the background of the child's social development."[10]

Northway very properly points out that social acceptability cannot be regarded as some kind of absolute value. From her observations of children[11] she concluded that "the assumption that increased sociability and optimal personality development are directly related seems unwarranted." She found no evidence for a belief that high acceptance is better than acceptance by a few, for "the youngster with his few loyal friends, a socialized point of view, and ability to play his part in a group may be as adequate and happy a person as the very highly acceptable child who is the center of the group. . . ."

It should not be felt that this re-evaluation of the importance of choice statuses, to the measurement of which the sociometricians have devoted so much of their energy, reduces the meaningfulness of much of their former work. Studies such as Jennings' *Leadership and Isolation* are an important source of information on the structure of groups, and have given valuable leads for an understanding of the dynamics of the interrelation between the

[9]Northway, Mary L., "Outsiders: A Study of the Personality Patterns of Children Least Acceptable to their Age Mates," SOCIOMETRY, 1944, 7:10-25.

[10]*Ibid.*

[11]*Ibid.*

individual patterns and group needs. At the same time, the study of the meaning of his choice status to the occupant of that position adds an important new dimension to the study of the group structure. It puts flesh on the bare skeleton of the strucural analysis. The combination of the two approaches, the mapping of status positions within the group and the intensive study of the meaning of the positions to their occupants, will form a valuable adjunct to any socio-psychological methodology.

A sociometric survey 1941-1945 would not be complete without referring to Bronfenbrenner's contribution to the measurement of sociometric status,[12] a further refinement of the studies of social configurations based on deviation from chance by Moreno and Jennings.[13]

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[12]Bronfenbrenner, Urie, *The Measurement of Sociometric Status, Structure and Development*, Sociometry Monograph, No. 6, Beacon House, New York.

[13]Moreno, J. L. and Jennings, Helen H., "Sociometric Statistics of Social Configurations," SOCIOMETRY, Vol. 1, 1937, or Sociometry Monograph, No. 3.

ANNOUNCEMENTS

Sociometry, Executive Committee

Dr. George A. Lundberg is resigning as chief editor of SOCIOMETRY, he continues as contributing editor and as issue editor. Beginning with January 1947 SOCIOMETRY will have for each issue a special editor, chosen from among the pioneers of the sociometric movement. The new executive committee remains unchanged except for the following: General Editor, J. L. Moreno; Issue Editors, Helen H. Jennings "Sociometry and General Theory" (February 1947), Merl E. Bonney "Sociometry and Education" (May 1947), Joan H. Criswell "Sociometry and Statistics" (August 1947), Leslie D. Zeleny "Sociometry and Sociology" (November 1947). Mary L. Northway "Sociometry and Psychology" (February 1948), George A. Lundberg and Stuart C. Dodd "Sociometry and Systematic Sociology" (May 1948), Georges Gurvitch—Sociometry and Microsociology (August 1948).

Sociatry, Journal of Group and Inter-Group Therapy

The first number of the new journal is now in press. Its aim is to be the focal point and clearing house for theory and practice in group and inter-group therapy. Among the leading projects are psychodrama, sociodrama and motion picture therapy. It contains more than twenty contributions by leading authorities in the rapidly expanding field. The editor, J. L. Moreno, introduces the new science, synthesis of medical psychology and medical sociology. Then follow "Psychodrama in the Home", "Psychodrama in the Neighborhood", "Psychodrama in the School", "Psychodrama in the Workshop", "Psychodrama Examines the Doctor", "Sociodrama and Community Catharsis", and so forth. Contributing editors are: Lewis Barbato, University of Denver; Roger G. Barker, Clark University; Margaret Barron, Federal Security Agency; Kenneth D. Benne, Columbia University; Leland P. Bradford, National Education Association; W. Arthur Cable, University of Arizona; Lloyd Allen Cook, Wayne University; Hubert S. Coffey, University of California at Berkeley; Paul Cornyetz, Brooklyn College; Mayhew Derryberry, U. S. Public Health Service; H. V. Dicks, Leeds University, England; Ernest Fantel, U. S. Army Medical Corps; Norman Fenton, Department of Correction, California; Pierre D'Fouquet, Office Public d'Hygiene Sociale, Paris; John R. P. French, Nejelski & Company, N. Y. C.; Robert B. Haas, Ohio State University; Margaret Hagan, American Red Cross; Charles E. Henry, University of Toronto; Helen H. Jennings, American Council on Education; Lillian Wald

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American Sociometric Association

The annual meeting of the society will take place on May 1947 at the Sociometric Institute and at the Pennsylvania Hotel. All members are requested to send in a paper (300 words) on their current research for the 1947-48 volume now in preparation. Application of full membership has to be accompanied by a three hundred word report describing the problem area to which the applicant's work is related.

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Journal of Human Relations

The publication beginning in January 1947 of a new scientific quarterly journal, "Human Relations", is jointly announced by the Research Center for Group Dynamics of the Massachusetts Institute of Technology in Cambridge, U. S. A., and the Tavistock Institute of Human Relations in London, England.

Cahiers Internationaux de Sociologie

The journals, edited by Georges Gurvitch, appear in annual volumes. Volume 1 is now available and contains among others, articles by Ernest W. Burgess, Florian Znaniecki and Robert S. Lynd. The title of Znaniecki's article is "Sociometrie et Sociologie." The Cahiers Internationaux de Sociologie are published by: Aux Editions du Seuil, 27, rue Jacob, Paris, VIe, France.

Pamphlet, Psychodrama and Group Psychotherapy

This is a reprint of a paper read by J. L. Moreno before the American Psychiatric Association in May, 1946. For purposes of distribution to students of psychodrama and group psychotherapy these pamphlets may be had for the following rates:

50 copies—$0.15 each
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Books Received

George A. Lundberg, "Can Science Save Us?", Longmans, Green and Co., New York, 1947, $1.75. Roger G. Barker, Beatrice A. Wright, and Mollie R. Gonick, "Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability", Social Science Research Council, New York, 1946. Georges Gurvitch, "Essais de Sociologie", Librairie due Recueil Sirey, Paris, France, 1937, and "Sociology of Law", Philosophical Library and Alliance Book Corporation, New York, 1942, $3.75. Richard T. LaPierre, "Sociology", McGraw-Hill Publications in Sociology, New York, 1947, $3.75.

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tinuous throughout the year. For this group sessions and classes are given 3 times a week in the late afternoon and evening, so that they are able to pursue a professional occupation during the day, or other academic studies. The full enrollment capacity of this group is 80 students. The weekly tuition fee is $20.00, the fee for a 12 weeks' course is $240.00; with additional training in directorial capacity the fee runs to $360.00. There are a number of half scholarships available. Students who qualify for and obtain such scholarships pay half the tuition for the 12 weeks' course, $120.00 and $180.00 respectively. New York students may attend weekend sessions at Beacon, N. Y., staying at the Beacon Institute for the weekend if room is available, for an additional fee. Such weekend training is meant especially for students interested in directorial techniques and work with mental patients. All students are required to pay a registration fee of $5.00 in advance.

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Students fall under two categories: Category A: the Beacon Group-Enrollment in this group is limited to 30 students. Classes and sessions begin on June 1st and last for 4 months, until October 1st. Students of this group receive their room, board and training at the Psychodramatic Institute at Beacon, N. Y. The fee for students of this group is $60.00 per week, $240.00 for a four weeks' stay. Directorial work is part of the training of this group. Applications for enrollment in this group should be in our hands by June 15, 1947, with registration fee of $5.00. Members of the Beacon group may attend New York sessions at a small additional expense.

B: The New York Group-Students live in New York (those who have private residence) or commute from out of town and attend the classes at the New York Institute at 101 Park Avenue. These courses are con-

tinuous throughout the year. For this group sessions and classes are given 3 times a week in the late afternoon and evening, so that they are able to pursue a professional occupation during the day, or other academic studies. The full enrollment capacity of this group is 80 students. The weekly tuition fee is $20.00, the fee for a 12 weeks' course is $240.00; with additional training in directorial capacity the fee runs to $360.00. There are a number of half scholarships available. Students who qualify for and obtain such scholarships pay half the tuition for the 12 weeks' course, $120.00 and $180.00 respectively. New York students may attend weekend sessions at Beacon, N. Y., staying at the Beacon Institute for the weekend if room is available, for an additional fee. Such weekend training is meant especially for students interested in directorial techniques and work with mental patients. All students are required to pay a registration fee of $5.00 in advance.

J. L. Moreno, M.D., Director of the Psychodramatic Institute in Beacon and New York City, assisted by a staff of instructors, will conduct the seminars and sessions. Students will be permitted to use the library at the Psychodramatic Institute. Every student is expected to formulate and work out a research project related to his own field of application, under guidance. Upon completion of the course every student will obtain an official acknowledgment from the director as to the duration of the course and the accomplishments of the student.

Students interested in training courses in 1947 and 1948 may file their applications *now*; they will be placed on a preference list which will assure their admission.

ENROLLMENT CARD FOR STUDENTS,
PSYCHODRAMATIC INSTITUTE

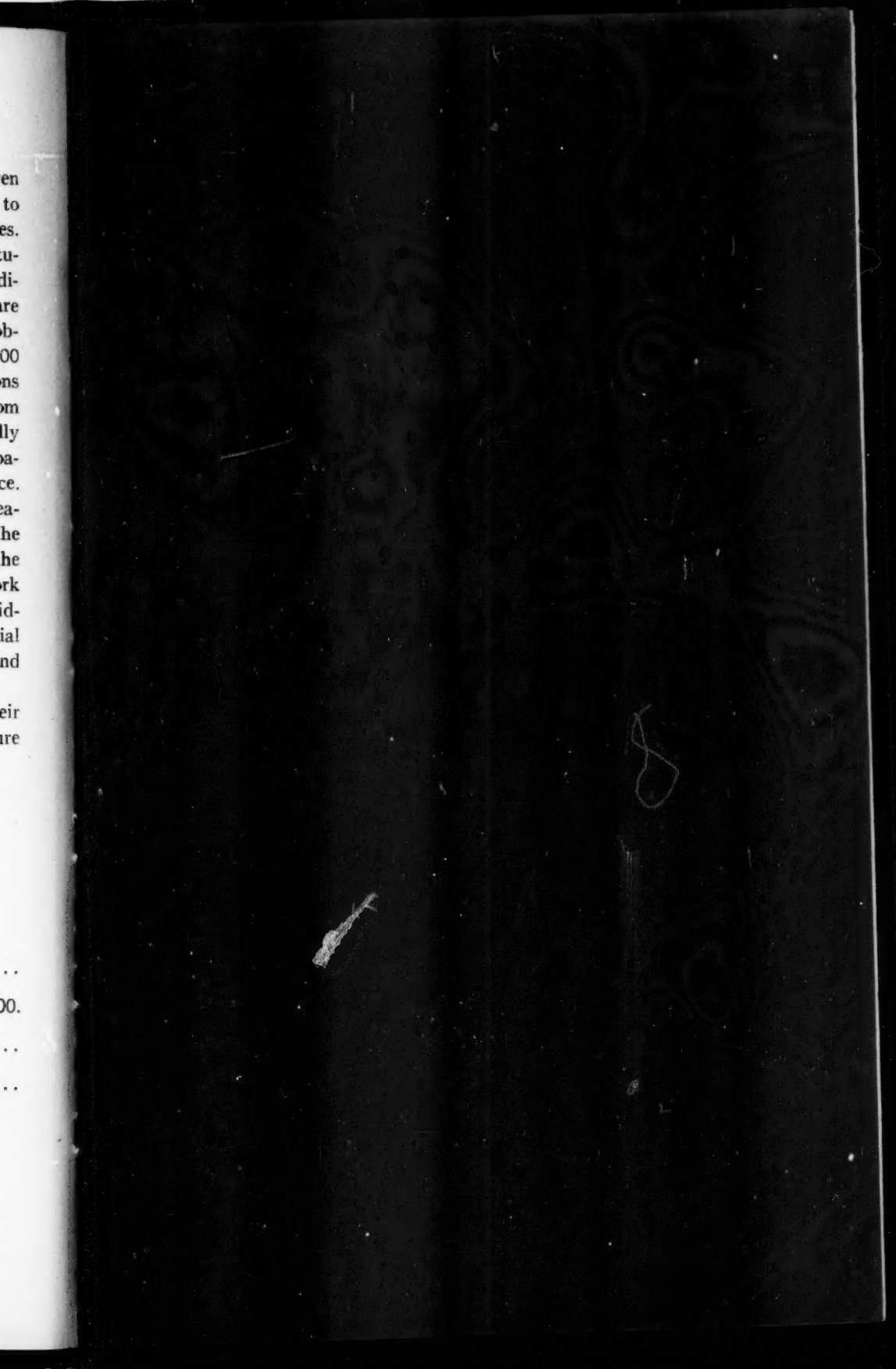
I enroll for a ..... weeks training course at

Beacon, New York

from ..... till .....

..... and enclose herewith the registration fee of $5.00.

Name, in full (please print) .....

Address .....

Fill in, tear off and mail to Psychodramatic Institute,
Beacon, New York